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PLANOGRAPH PRINTING
ITS PLACE IN MODERN BUSINESS

A Thesis
Submitted to the
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by
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P R E F A C E

This study has been made to show the large and ever-increasingly important place that planograph printing holds in our modern business structure.

The development of the process is shown, from the humble beginning of lithography, in the late eighteenth century, to its varied uses in present day business.

No attempt has been made to cover colored work, as the large proportion of planograph printing today is black and white. Colored planograph is a study by itself. Though colors are daily assuming more importance in planograph, this work still seems to be within the province of the color lithographer.

Planograph has won, and is holding, its place by following an old printing precept - "Do it by the process that best fits the job."

Planograph printing is not presented as a "cure all" for printing problems. Its advantages

have been set forth for guidance of the reader when selecting the printing method best suited to his problem.

I wish to acknowledge the assistance given me, through information and samples, by a number of planograph printers, particularly Spaulding-Moss Company, Boston; Edwards Brothers, Inc., Ann Arbor, Mich.; The National Process Company, New York City; and John S. Swift Company, Inc., of Chicago.

Also, I am appreciative of helpful recommendations received from individuals actively engaged in planograph production, and for the information and experiences of printing buyers with planograph and other reproduction processes.

Dorothy E. Cole.

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PLANOGRAPH PRINTING

ITS PLACE IN MODERN BUSINESS

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S E C T I O N I

HISTORICAL BACKGROUND

C H A P T E R 1

L I T H O G R A P H Y

The Forerunner of Planograph

Planograph Printing, in reality, is photo-offset lithography in an elementary form, and its discovery dates back to the discovery of lithography by Alois Senefelder.

"Of all the Graphic Arts, Lithography alone has an authentic history.....Alois Senefelder invented the art in 1798.....no one has been able to deprive him of one jot or one title of his discovery - though many have tried; no one has succeeded in doing anything except what he did or said could be done. Many have thought they had invented new methods in stone printing - lithography - only to turn to Senefelder, and find that he had either practised, or predicted them." (1) Alois Senefelder was born in Prague November 6, 1771, the eldest son of a wandering play-actor. During his boyhood he travelled throughout Germany with his father and other actors.

He went through school at Munich, graduating with honors. Young Senefelder wished to be an

(1) Joseph Pennell and E. Robbins, Lithography and Lithographers, p. 5.

actor but his father sent him to Ingolstadt to study law. In 1792, when Alois had been at the University three years, his father died, leaving a widow and eight younger children in Alois' care.

Realizing that law would not provide an immediate livelihood for the family, Senefelder again turned to the stage determined to gain fame and fortune. He wrote some plays and joined a company journeying from town to town in Bavaria.

Soon his funds were exhausted and he realized his plays would not be printed or published unless he did it himself. So with full confidence young Alois returned to Munich and began to experiment with printing. He was greatly handicapped by a lack of technical knowledge, except for a few hints he had picked up in printing houses while earlier plays were being printed.

As the necessary materials for engraving were expensive Senefelder turned his attention to etching, with the result that his numerous experiments led to the discovery of lithography. The

discovery of this invention was accidental and is told in his own book "The Invention of Lithography" as follows:

"I had just ground a stone plate smooth in order to treat it with etching fluid and to pursue on it my practice in reverse writing, when my mother asked me to write a laundry list for her. The laundress was waiting, but we could find no paper. My own supply had been used up by pulling proofs. Even the writing ink was dried up. Without bothering to look for writing materials, I wrote the list hastily on the clean stone, with my prepared stone ink of wax, soap and lampblack, intending to copy it as soon as paper was supplied.

"As I was preparing afterward to wash the writing from the stone, I became curious to see what would happen with writing made thus of prepared ink if the stone were now etched with aqua-fortis. I thought that possibly the letters would be left in relief and admit of being inked and printed like book types or wood cuts. My experience in etching,

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 1, 1801. It contains a report on the state of the Union and the progress of the government during the year 1800.

2. The second part of the document is a report from the Secretary of the Treasury, dated January 1, 1801. It contains a detailed account of the financial state of the government and the measures taken to improve it.

3. The third part of the document is a report from the Secretary of the Navy, dated January 1, 1801. It contains a detailed account of the naval operations and the state of the fleet.

4. The fourth part of the document is a report from the Secretary of the War, dated January 1, 1801. It contains a detailed account of the military operations and the state of the army.

5. The fifth part of the document is a report from the Secretary of the Interior, dated January 1, 1801. It contains a detailed account of the land and mineral resources of the United States and the measures taken to develop them.

6. The sixth part of the document is a report from the Secretary of the State, dated January 1, 1801. It contains a detailed account of the foreign relations of the United States and the measures taken to maintain peace and harmony with the other nations.

7. The seventh part of the document is a report from the Secretary of the War, dated January 1, 1801. It contains a detailed account of the military operations and the state of the army.

8. The eighth part of the document is a report from the Secretary of the Navy, dated January 1, 1801. It contains a detailed account of the naval operations and the state of the fleet.

9. The ninth part of the document is a report from the Secretary of the Treasury, dated January 1, 1801. It contains a detailed account of the financial state of the government and the measures taken to improve it.

10. The tenth part of the document is a report from the Secretary of the State, dated January 1, 1801. It contains a detailed account of the foreign relations of the United States and the measures taken to maintain peace and harmony with the other nations.

which had showed me that the fluid acted in all directions, did not encourage me to hope that the writing would be left in much relief. But the work was coarse, and therefore not so likely to undercut as ordinary work, so I made the trial. I poured a mixture of one part aqua-fortis and ten parts of water over the plate and let it stand two inches deep for about five minutes. Then I examined the result and found the writing about one-tenth of a line, or the thickness of a playing card, in relief.

".....Eagerly I began inking it. I used a fine leather ball, stuffed with horse hair, and inked it very gently with thick linseed oil, varnish and lampblack. I patted the inscription many times with this ball. The letters all took the colour well, but it also went into all spaces greater than half a line. That this was due to the overgreat elasticity of the ball was clear to me. So I cleansed my plate with soap and water, made the leather tense, and used less colour. Now I found

colour only in such spaces as were two or more lines apart." (1)

The stone used was a piece of Kelheim stone, plentiful in nearby quarries, and generally used for laying house floors in Munich. This same kind of stone is still used by lithographers.

Senefelder found the smooth Kelheim stone would replace copper and that after etching it he could obtain prints. After many experiments he learned that a combination of wax, soap, lamp-black and water made a stopping-out solution, and so he had most of the materials of lithograph.

Fortune did not come with the discovery; only such extreme poverty that Senefelder contemplated suicide, then enlistment as a soldier to get funds for continuing the experiments, However, both plans failed.

Soon he met a musician friend, Gleissner, who had compositions to be published. He and Senefelder went into partnership, and bought a copper-

(1) Alois Senefelder, The Invention of Lithography, pp. 7,8.

plate press. They wrote the music on the stone and then printed it.

One important fact should be noted, Senefelder first used a copper-plate press. His first prints were shown to Elector, Charles Theodore, who promised an exclusive privilege and gave Senefelder one hundred florins in recognition of these prints.

Theodore, in turn, submitted them to the Electoral Academy of Sciences, calling their attention to the inexpensiveness of the new process. Even in that early day price was a factor to be reckoned with. The Academy, however, felt as the inventor had made only a small initial investment, twice the cost of the press would be a generous reward. Accordingly, they presented twelve florins to Senefelder. It is indeed fortunate that lithographic presses cannot be purchased for a similar sum today.

Senefelder still had many technical obstacles to overcome. Work came to him, as a result of his much talked about invention, but he could not do it. Though he prepared his stones carefully, his

first press gave smudged impressions; his second press broke the stone after a few proofs were pulled and the third dropped a heavy Kelheim stone and nearly killed Senefelder. Printers were awkward, they spoiled a great deal of stock, customers became impatient and the Elector withheld the exclusive privilege.

These difficulties did not daunt our young inventor. He continued and soon with additional experience was able to iron out his difficulties.

"The fact is that in 1796, though he was printing from stone, the art of lithography had not been invented. But by 1798 he brought it to such perfection that he left next to nothing, in the way of invention, for future lithographers; only the development that comes with practice and time. (1)

Joseph Pennell and E. Robbins, Lithography and Litho-
(1) graphers, p.13.

CHAPTER 2

DEVELOPMENT TO PLANOGRAPH PRINTING

The commercial importance of lithography was evident from the beginning and in America lithoprints came into fairly common use early in the nineteenth century. Today they are giving us an authentic "history" of our ancestors, for in those early days there were no illustrated dailies, news reels or photographs as we know them now. Lithographs vividly tell the story of American life of the past century.

Some fifty to sixty years ago photography was introduced in the printing trades. However, it was not an essential until letterpress blocks were used. The combination of photography and lithography, separate arts for many years, brought the first real departure from the methods introduced by Caxton more than four hundred years ago.

"Lithography entered on a new era when the introduction of zinc and aluminum plates made possible the development of the rotary machine, resulting in a greatly enhanced speed of production. A still more revolutionary improvement was realized

in 1910 when offset printing was shown to have enormous advantages for work on paper." (1)

Until quite recently lithography has been a confined art because the stone printing surface necessitated the use of flat-bed machinery. The present general substitution of thin zinc or aluminum metal plates for the Kelheim lithographic stone permits the use of rapid rotary presses.

In lithographic (planographic) printing three kinds of printing surfaces are used -- stone, zinc, or aluminum plates. We are concerned with the last two which go on offset rotary presses.

This new offset process prints, as its name implies, the print is set off or transferred. The ink from the stone, or plate, is printed on the rubber cylinder covering, which becomes the printing surface and in turn sets off or transfers the print to the paper.

Ira W. Rubel accidentally discovered this process in 1906 when a lithographic press did not feed a sheet and transferred the ink from the stone to cylinder covering. The next revolution fed

(1) Times Publishing Company, Printing in the twentieth Century, p. 111.

another sheet which took an impression on the front, from the plate, and a second on the back from the cylinder covering.

Thus offset printing got its start and entirely changed lithography (planography). The offset rotary meets the damping rollers, inkers and rubber blanket cylinders on each revolution in opposition to the double travel a flat-bed press requires to perform the same operations. The rotary principle more than doubles the speed and has other economies as well. A very light pressure gives an offset print, and there is no paper indentation.

Photography has played its part in developing offset printing through the use of metal plates instead of the lithographic stone. Originals photographically transferred to zinc or aluminum plates give better prints than can be obtained from a stone. The rubber blanket on the offset cylinder goes deep into the metal plate grain setting off every particle of the photographic original.

By using metal plates the camera has been able to replace a large amount of the hand work formerly done by the lithographic artist. Also, a more

faithful facsimile is secured, in a much shorter time, through the use of the camera.

The litho-stone artist has practically disappeared and the use of thin metal plates has made the process almost entirely photo-mechanical. "It is really no longer lithography, 'writing on stone', but planography or surface printing, though the term 'lithography' will no doubt persist." (1)

(1) F. T. Corkett, Photo-Lithography and Offset Printing, p. 3.

S E C T I O N I I

PLANOGRAPH PRINTING

ITS PLACE IN MODERN BUSINESS

CHAPTER 1

GENERAL SCOPE OF THE PROCESS

"Much confusion exists in the lay mind as to the real meaning of the term planograph printing. There is a distinction between the terms planograph process and planograph printing which, no doubt, is responsible for this confusion. The term planographic process, in general embraces all forms of printing from a flat or plane surface, as distinguished from letterpress (relief) printing and intaglio printing. The planographic process embraces lithography in all its phases, callotype and offset printing, all of which are produced from a plane surface through the opposition of various elements to one another, such as the grease and water of lithography.

".....In effect, planograph printing as used by the trade is offset printing in its most elementary form. In its broadest sense it includes the reproduction of original copy which comes in the form of printed matter, typewritten copy, drawings, photographs, or combinations of all these." (1)

(1) Wm. Guy Martin, Planography, p. 1.

THE HISTORY OF THE
CITY OF BOSTON
FROM THE FIRST SETTLEMENT
TO THE PRESENT TIME
IN TWO VOLUMES
BY NATHANIEL BENTLEY
OF THE BARR

VOLUME THE FIRST
FROM THE FIRST SETTLEMENT
TO THE YEAR 1700
PUBLISHED BY
JOHN BENTLEY
AT THE SIGN OF THE
CROWN IN THE
MARKET PLACE
1787

All printing processes fall into one of three classes; that below the surface, Intaglio; printing above the surface generally known as letterpress, Relief; and finally, that on the surface or an even plane, Planograph. Progress in all three processes has been greatly enhanced by photography, until now photomechanical processes practically dominate each of these classes of reproduction.

The following chart gives briefly the outstanding production features of Relief, Planographic and Intaglio printing.

COMPARISON OF PRODUCTION POSSIBILITIES (1)
OF THE THREE MOST USED PROCESSES

	<u>Relief</u> <u>Letter-press</u>	<u>Planographic</u> <u>Offset Lithograph</u>	<u>Intaglio</u> <u>Rotogravure</u>
Text type	Must set.	Must set.	Must set.
Transfers	None.	Yes, either photo or type.	Yes, either photo or type on onion-skin stock.
Stocks for color reproduction	Calendered or coated.	Medium calendered or M.F.	Machine finish or newsprint.
Art work for:	Engravings.	Negative or positive transfers.	Negative and positives for carbon tissue.
Reproduction of plates	Stereotype - electrotypes.	None.	None.
Make-up form	Individual units moved to register.	One unit of entire form.	One unit of entire form.
Preparation form or plates	Lock-up time for form.	Develop and treat plate for press.	Etch cylinder for press.
Run possibilities	Flat or rotary.	Flat or rotary.	Flat or rotary.
Characteristics of finished product	Sharp definite detail evidence of slight impression.	Soft or matt finish no impression showing.	Soft or matt finish no impression showing.
Time elapse between colors for handling of job	5 to 8 hours.	2 to 5 hours.	Immediately.
Impressions from plates	Nickle electros up to one million. Chromium plated electros run over this amount.	Regular offset 50M Deep-etch offset 250M.	Cylinder 400M Flat plate 150M

(1) Fred W. Hoch, Do Your Salesmen Really Know All Printing Processes?, Printing, July 25, 1931.

A printing axiom is, "Do it by the process that best fits the job."

We are to consider planographic printing or offset lithography, and reference to the preceding chart quickly shows some of the advantages claimed for this process. Art work is reproduced by transfer; there are no electros or cuts to be made; no make-ready or lock-up time is necessary; the entire form is on one plate which is quickly developed ready for the press and produces a job having a soft finish, leaving no impression on the paper. These outstanding characteristics of planograph printing will be treated in more detail in later chapters.

While planograph printing ordinarily is done on a rotary offset press, this process has also been adapted to a typographic press, as shown by the following reprint.

THE HISTORY OF THE
CITY OF BOSTON
FROM THE FIRST SETTLEMENT
TO THE PRESENT TIME
BY
JOSEPH NEALE
OF THE BOSTON BAR
IN TWO VOLUMES
VOL. II.
BOSTON: PUBLISHED BY
J. NEALE, AT THE SIGN OF THE
CROWN, IN CORNHILL.
1808.

" 'Merchrome', a Planographic Method of Printing on a Typographic Press.

"Readers of the Photo-Engravers Bulletin were very agreeably surprised at the beautiful color cover shown on the March issue. The cover stock used was rough-surfaced, and yet the ink reached the high as well as the low spots of the paper's surface. The printings were four: black, yellow, blue and pink. The whole effect being so exceedingly soft, it suggested that Louis Flader, that experienced editor, was becoming offset-minded, until it was learned that the whole was printed on a Universal press.

"A mercury planographic plate was used for the black or key plate, and three rubber plates for the colors. From a crayon drawing a highlight-halftone negative was made. The photoprint from this negative was made on a chromium-plated copper plate. After the enamel halftone was developed and dried the exposed surfaces of the chromium were etched away with hydrochloric acid, to leave the copper exposed. The copper was rubbed with mercury and chalk, purchased at any

drug store, and it was ready for the press. Three proofs of this key plate were pulled and the ink offset on rubber sheets to serve as a guide in the cutting of the color plates.

"The mercury copper alloy on the surface of the key plate repels ink absolutely, whereas the chromium enamel image receives and gives off printing ink perfectly. A soft rubber blanket is used as a tympan, and here is a planographic plate for use upon a typographic press. The mercury evaporates slowly from the copper surface, but is renewed from the printing ink, as this contains a trace of mercury. 'Merchrome' is worked by Marshall T. Respass, who is president and treasurer of the Respass Engraving Company, Jacksonville, Florida." (1)

Planograph originals, as previously stated, may be "printed matter, typewritten copy, drawings, photographs, or combinations of all these." (2) In the majority of instances the originals are typewritten

(1) Stephen H. Morgan, The Inland Printer, May 1932.
(2) William Guy Martin, Planography, p.1.

on paper and may be enlarged or reduced almost at will for reproduction. There are presses that take a thin metal plate on which the copy may be typed. This type of plate, however, is restricted to facsimile reproduction. Most planographers favor the first method for originals, which permits of enlarging or reducing the copy.

It will readily be seen that planograph printing is adapted to many different types of reproduction work, particularly where forms are not standing, where several drawings, graphs or halftones are involved, or where the press run is short.

Before considering either the general or specialized uses of this process let us remember that planograph printing is usually reproduced from typewritten originals, previously printed matter, line drawings, sketches, or half tones, alone or in combination.

Planograph printing for the most part is done in black and white, and printed on a paper suited to the majority's needs. Most firms doing

planograph printing, or photo-offset lithography, do some color work, but in the main they consider that color work is still within the province of the color lithographer, so this discussion will deal primarily with black and white planograph reproductions.

Covers, captions, and even entire pieces are sometimes typeset but, except in unusual cases, this so increases the cost as to make it preferable to print such material. One of the main savings effected by planograph printing comes from type-written prepared originals.

CHAPTER 2

GENERAL USES

The general uses of planograph printing are so many and varied that this chapter will only cover some of the more important and more common ones.

Sales Letters, Testimonials, Advertising Pieces, Broadsides, Price Lists, Booklets, Surveys, Dealer Helps, Catalogs, Sales Manuals - these are a few of the printing needs that planograph covers for the general sales and advertising departments in modern business.

You can intersperse halftones, cartoons, drawings, charts or other illustrations in your copy at very small expense. Many times they may be either drawn in or pasted on the copy and all "shot" by the camera at the same time. Letter heads or other printed matter can be pasted into position on your original and planographed with your typewritten, hand lettered or drawn copy at no extra cost. With planograph you do not have to wait or pay for line cuts or electrotypes.

It is not necessary to typeset work to be planographed, typewritten originals give excellent

reproductions and are secured quickly as the need arises. Some typical examples may be seen on pages 1a - 3a.

General, Office and Accounting Forms for school, office, factory or any place where forms are used may be procured promptly and inexpensively by the planograph process.

Now you can have a form for every need - production records, sales charts, inventory forms, shipping records, all kinds of statements and office forms you thought were limited to "big business" are available to everyone at a modest expenditure.

Just draw up your own form - a good pen and ink drawing with hand-lettered or typed headings will reproduce excellently - and have it planographed in whatever size you require. You can print 100, to "try out" a new form, or several thousand.

Planographed forms can be adapted to your particular problem and quickly changed as your experience or system dictates, at very little expense. Planograph printed forms do not require plates, wax or printer's rules - just good black and white copy

THE HISTORY OF THE
CITY OF BOSTON
FROM THE FIRST SETTLEMENT
TO THE PRESENT TIME
BY
JOHN HUTCHINGS
OF THE BARRISTER AT LAW
IN THE SUPREME COURT OF JUDICATURE
IN NEW ENGLAND
AND
OF THE BARRISTER AT LAW
IN THE SUPREME COURT OF JUDICATURE
IN THE KINGDOM OF GREAT BRITAIN
AND IRELAND
IN TWO VOLUMES
THE SECOND VOLUME
LONDON
PRINTED BY J. DODD, ST. MARTIN'S LANE
1764

that can be photographed. Some typical forms may be seen on pages 4a and 5a.

Text Books, Class Outlines, Laboratory Manuals, Diagrams, Lecture Notes, Charts, Graphs, Reports, Bulletins, Mechanical Drawings are some of the printing needs planograph is filling in schools and colleges. The flexibility of the process, its ability to enlarge or reduce the copy, and to include diagrams, graphs and charts peculiarly adapts this reproduction method to educational requirements.

Professors and instructors can, with planograph, present their own material to their classes in printed form, either bound or loose leaf. Text books may be tried out for one or two semesters and corrected before their final printing. Laboratory experiments and other exhibits may be included usually at no extra cost. Just draw them, or paste previously printed ones, right on your copy.

You do not have to wait for type to be set, plates to be made or even to proof read the copy. The planograph process photographs your originals and there can be no errors or transpositions. Another

advantage is speed of production and economy, when a limited edition is desired. Examples of this class of planograph printing may be seen on pages 6a - 8a

Maps, Music, Clippings, Graphs, House Organs, Reprints of Out of Print Books, Handwritten Letters or Pieces, Posters, Architects Plans, Magazine or Other Reprints, are some miscellaneous uses filled by planograph printing.

The finest lines and details are faithfully reproduced by this process, whether it be in facsimile, enlarged or reduced size. Music is planographed directly from the composer's score and there is no possibility of error in photo-offset lithography.

Making copies of Out of Print Books is "just in a day's work" for the planographer. There are no long waits for new plates to be made, or new type to be set, you only need one copy and the camera will do the rest. This, of course, applies to all kinds of reprints and clippings.

Anything that will photograph will planograph, and there's no wondering how long you have to wait or how much you have to pay for line cuts or

electrotypes as planograph printing does not use them. Exhibits of work planograph printed from this group are shown on pages 9a - 12a.

Some additional common uses for planographed printing are shown on the chart inserted after page 30.

There are many, many more niches that planograph printing is filling each day, but those listed will give you a virile idea of how this process fills some need in nearly every department of modern business.

To summarize, planograph will "reproduce from typewritten originals, books and booklets, catalogs, sales manuals and so forth. These may be straight line typing on letter-size sheets, reproduced same size or reduced, or they may contain photographs, halftone sketches, charts, graphs, groups of specimens of products combined with descriptions of their use; tabulations of statistics or price lists; in fact, the possibilities are almost unlimited." (1)

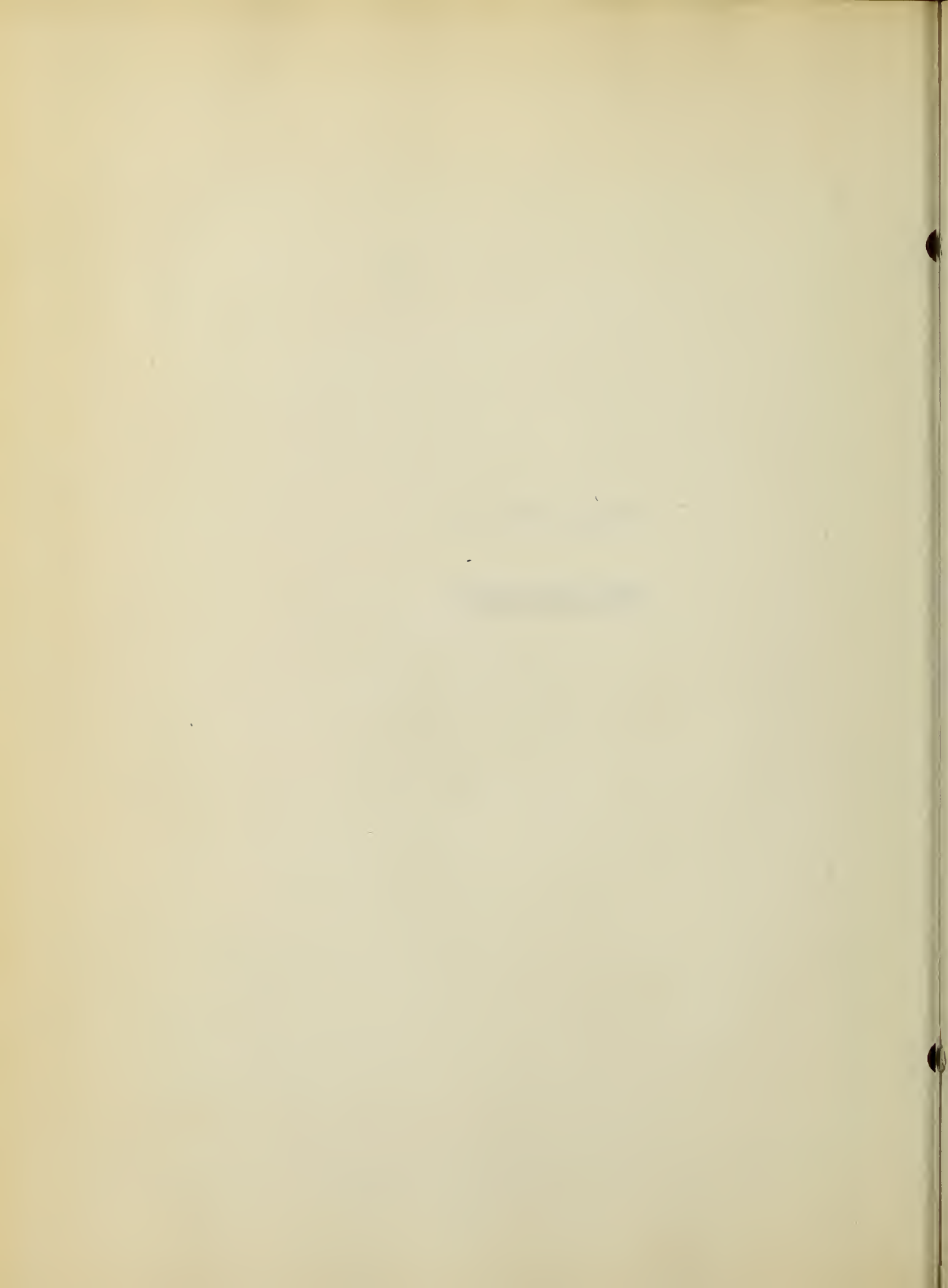
(1) The National Process Company, Inc., Type It and Repro-Print It, p 19 & 21.

THE MORE IMPORTANT USES OF — PLANOGRAPH PRINTS FIND YOUR OWN LINE	ADVERTISEMENTS	BLANK FORMS ALL KINDS	BLUE PRINTS	BOOKS	BRIEFS	BROADSIDES	CATALOGUES	CHARTS	CLIPPINGS	COURT EXHIBITS	CODE BOOKS	DRAWINGS	ESTIMATES	HAND BOOKS	HOUSE ORGANS	LEDGER FORMS	LETTERS	MAPS	OFFICE & FACTORY FORMS	PAGES FROM BOOKS	PHOTOGRAPHS	PORTFOLIOS	PRICE LISTS	PRODUCTION DATA	PURCHASINGS REG'S.	RARE DOCUMENTS ETC.	RECORDS OF ALL KINDS	REPORTS ALL KINDS	SALESMEN'S DATA BOOKS	SHIPPING INFORMATION	SMALL FOLDERS	SPECIFICATIONS	STATISTICS	TARIFF & RATE SHEETS	TESTIMONIALS	TRACINGS	
ACCOUNTANTS		X		X	X		X	X	X	X		X		X	X	X	X	X	X	X	X	X					X								X		
ADVERTISING MEN	X	X		X			X	X	X			X		X				X			X		X					X							X		
ARCHITECTS		X	X				X	X				X						X		X																X	
BANKS		X						X					X					X		X																X	
BROKERS		X						X	X				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
COLLEGES		X	X	X	X		X	X	X			X		X				X		X																	
COMMISSIONS		X	X	X	X			X	X			X		X				X		X																	
CONTRACTORS		X	X	X	X			X				X		X				X		X																	
DESIGNERS		X	X	X	X							X		X				X		X																	
ENGINEERS		X	X	X	X			X				X		X				X		X																	
FACTORY MANAGERS		X	X	X	X			X				X		X				X		X																	
LAWYERS		X			X				X									X		X																	
LIBRARIES & MUSEUMS		X			X				X									X		X																	
MANUFACTURERS		X	X				X	X			X		X		X			X		X																	
MINING COMPANIES	X	X	X		X			X		X		X			X			X		X																	
OFFICE MANAGERS		X						X			X				X			X		X																	
PHYSICIANS								X										X		X																	
PRINTERS	X	X			X		X	X	X		X				X			X		X																	
PURCHASING AGENTS		X						X				X						X		X																	
PUBLIC CARRIERS	X	X			X			X					X					X		X																	
REAL ESTATE MEN		X																X		X																	
SALES MANAGERS	X	X						X						X				X		X																	
SCHOOLS		X	X	X				X				X						X		X																	
STATISTICIANS		X	X		X			X				X						X		X																	
STORES	X	X						X						X				X		X																	
TOWN DEPARTMENTS		X	X					X						X				X		X																	
TITLE COMPANIES		X						X						X				X		X																	

Spaulding, Moss Company, Planograph Printing - A new way
to reduce printing costs.

CHAPTER 3

SPECIALIZED USES



It is but natural that some specialized uses have been developed for planograph printing. Modern business and able executives are always on the alert to find new ways of accomplishing a given task more quickly, or less expensively in an acceptable manner. This is the mission planograph printing is fulfilling on thousands of printing jobs.

Many of the jobs that have always been type set and printed are being found adaptable to planograph printing, or photo-offset lithography. Originals for this process may be comprised of one or more of the following: sketches, drawings, hand lettering, typewriting or previously printed matter, in fact whatever will photograph.

A few specialized uses of planograph printing have been selected for discussion.

Progressive Charts - those charts showing economic or commodity trends, stock movements and the like.

Previously you had to make a new electrotype each time a change was made. Now, with the planograph method, you simply lengthen the line on

the master copy and your new original is ready for the camera and planograph printing. No loss or lack of detail is evident and the chart may, of course, be enlarged or reduced at will. The savings in plate costs alone have proven a great boon to those financial and economic services that get out such charts periodically. See page 13a.

Poll or Police Listings - both economy and speed are obtained by using typewritten originals.

This has long been a big expense in the city and town budget, particularly in election years. With planograph, the originals may be typed right at headquarters and it is only a matter of days to get delivery on the finished books. Another economy is procured by reducing the size of the original copy and thereby permitting more lines or names to be printed on a specified page size. As the planograph charge is per page this last item has a special bearing on the budget. See page 14a.

Salesmen's Portfolio Sheets on Cloth - Planograph printing is equally as effective on cloth as on paper.

Cloth prints will materially increase the life of these much handled sheets, yet none of the detail or clearness is lost through the use of cloth.

Your carefully prepared advertising campaign was planned to increase sales and you can help your salesmen by giving them durable planograph reprints on cloth. No new type to set or pay for, just use your present ads for planograph originals. See page 15a.

Reverse Reading Prints - fill in the necessary information and they are blue print originals.

Planograph Reverse Reading Prints are processed on the back of a transparent sheet. This permits you to fill in on the front, or right side, of the sheet the proper information or data, thereby completing your blue print tracing.

You furnish the planograph original in positive or right reading and it is reversed by the planographer for a small additional charge. This type of print is particularly useful to manufacturers fabricating a technical article. See page 16a.

Pencil Sketches or Illustrations - an inexpensive method of showing style or specialty items.

Planograph printing does not distort or lose any of the details in an original pencil sketch. All the fine lines and shading are fully preserved. A good artist or draftsman can be used more frequently to make better sketches when you remember that no electrotypes are required with the planograph process. See pages 17a, 18a.

Registers of Pedigreed Animals - typewritten originals and their resultant economy, definitely take this work out of the typeset class of printing.

Two typewriting type faces - available on one machine - give the necessary type distinction and a speed in "composition" that cannot be approached by ordinary printing. Another planograph feature is the possibility of reduction in type-size, permitting more names to be on a page. This means a great deal as the charge is on a per page basis and some of these Registers, printed annually, run into several hundred pages for each edition. See pages 19a, 20a.

Illustrated Small Parts Catalogs - keeping these up to date is a real problem for the manufacturer who has yet to learn about planograph printing.

All you need are good pen and ink drawings from your draftsman. In the example shown the drawings were made larger, cut out and tacked on wall board, then reduced and planograph printed.

This process permits making changes or additions to your catalog quickly at a minimum expense. See page 21a.

Atlases or Assessors Plans - used by every city and town but frequently not printed on account of the excessive printing cost.

Planograph Atlases or Assessors Plans are printed directly from the town or city engineer's drawings, at the same, enlarged or reduced size. There are no extras to pay for and no long waits for the finished job. Planograph printing brings Atlases and Assessors Plans within the financial "reach" of real estate brokers and banks. See page 22a.

Financial statements and reports - may be planographed directly from the original figures.

This not only saves the time and expense of typesetting but definitely eliminates the possibility of transposing figures. You know that planograph

printed financial statements and reports are facsimile and no proof-reading will be necessary. See page 23a.

Other specialized uses for planograph printing include Greeting Cards, personalized Christmas Cards, Company Code Books, Annual Statements of Financial Condition as filed by insurance companies and railroads with state boards, Play Books, Magazine and Newspaper Circulation Analyses and Town Reports.

Each day brings forth new general and specialized uses for planograph - the printing process which gives good clear reproductions from black and white originals. You can planograph anything you can photograph.

CHAPTER 4

LIMITATIONS



There are comparatively few limitations for planograph printing when the work is kept within the scope of the process.

Its major field is in the reproduction of originals that may be typewritten. Even though some score or more typewriter type faces are available, the variety is not particularly extensive and there is but little opportunity to use more than one style of typewriter lettering on a single piece. There is one typewriter on the market that has two different type faces on the machine at the same time. For example see pages 19a, 20a.

Material being printed for the first time, and requiring regular printer's type, that has a large amount of composition is favorable to the printer.

On the other hand, re-runs of anything in previously printed matter, having heavy composition, goes to planograph printing if the type is not standing. Short runs of typeset composition may well be processed by photo-offset lithography as this method requires that no expensive time be spent on make-ready and lock-up.

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FAX: 773-936-5001
WWW.CHICAGO.EDU
CHICAGO, ILL. 60637
U.S.A.
TEL: 773-936-5000
FAX: 773-936-5001
WWW.CHICAGO.EDU

A further limitation is due to the fact that the planograph process prints from large zinc plates carrying several jobs. Only minor changes can be made on these plates once the copy has been transferred to them, whereas in ordinary printing a copy change presents no particular obstacle.

Lists and forms which are kept standing, of course, can be reproduced less expensively by printing than by planograph, as the major items of expense were absorbed on the initial run.

While little has been said about color work, this is handled by planograph printing on single as well as three and four color offset rotary presses. Lack of close registration presents an obstacle to planograph, but this mechanical difficulty will be overcome.

The economic necessity for using a standard paper precludes some jobs from being planographed, if they do not warrant the extra charge for running on a special stock. A further limitation is the unsuitability of extremely thin or heavy stock to the offset rotary press.

There are, however, but few limitations to planograph printing and they are of minor consideration. It may truthfully be said that planograph has practically no limitations.

S E C T I O N I I I

THE PLANOGRAPH PROCESS

C H A P T E R 1

PLANOGRAPH PRINTING IN GENERAL

Modern business in its search for new business, and the keen competition engendered by such a search, offers but little hope or success or economic justification to those organizations which cannot produce a better or more economical article than heretofore.

Planograph, one of the newer reproduction processes, meets this test of economical production. When one hundred or more copies of an original that has been previously printed or can be typewritten, hand lettered, drawn or pasted up, are required, planograph printing, or photo-offset lithography, is usually the answer for the securing of these reproductions. No cuts or electrotypes are needed to obtain good clean cut planograph prints.

"Planographic printing - lithography from stone, zinc or aluminum - is based on the utilization of the property or affinity for grease and water and gum arabic which the materials possess.

"Through the proper application of water and grease and gum arabic, the surface of stone or plate is divided into what may be termed an ink-

picture and a water-picture. The control of these pictures makes possible planographic printing, or lithograph."⁽¹⁾

After the copy has been prepared, usually typewritten, drawn or pasted-up, it is "shot" by the camera furnishing a paper negative. Halftones are usually made on film negative, to secure clearer reproduction, and stripped into position. Any imperfections are opaqued out and minor corrections made directly on the negative.

This negative, with eight or more others, is laid up and then quickly transferred, by a photo-mechanical process to a thin sensitized zinc plate. You will note no time has been spent waiting for cuts, rules or electrotypes to be made.

A further economy is effected by "gang-ing" several jobs on one plate. This, of course, means that all the jobs on the plate must be run on the same paper stock. For single sided work one firm has standardized on twenty pound bond, and a twenty-four pound for "work and turn" jobs. However, practically any paper from nine pound to five

(1) Lithography, The Senefelder Co., p. 21.

ply Bristol is suited to a rotary offset press.

The plate, without any "make-ready", is inked up and run on an offset rotary press which delivers an impression with every revolution of the press.

An offset rotary press actually prints from a resilient rubber cylinder blanket. Offset lifts the finest lines from the grained plate and gives a soft, pleasing print. This type of press gives good results on either a rough or smooth finished stock.

Also, an offset press prints a very thin layer of ink, which dries quickly. Therefore, the sheets delivered by the press may almost immediately be trimmed and delivered to the bindery if need be.

This sketchy outline of Planograph Printing shows the speed, and resultant economy, with which reproductions may be obtained by this process. Each of the operations will be detailed in subsequent chapters.

C H A P T E R 2

PREPARATION OF COPY

A. ORIGINALS

In preparing originals for planograph printing it first must be decided what form the "master" is to take. Planograph originals may be typewritten copy, line drawings, wash drawings, halftones, hand lettering, new type set, previously printed matter, or hand writing.

One or more of these types can be used satisfactorily. The copy may be put directly on the original or pasted with rubber cement.

All originals should, if possible, be black on a good white paper. Planograph printing is a photographic process and sharp black and white copy gives the best results.

Typewritten copy, because of its inexpensiveness and quick preparation by far leads other types of originals for planograph printing.

The first consideration is the selection of a machine. Most typewriters are equipped with either Pica or Elite type. Pica is 10 pitch, having 10 characters to the inch, and Elite 12 pitch with 12 characters to an inch. Several of the standard makes offer a choice from a score or more

type faces. Some are shown on pages 24a - 26a.

It is now possible on typewritten work to have a machine equipped with type suited to your needs. Type faces are available in more than 50 foreign languages, as well as the following special faces: fractional, diacritical, astrological, mathematical, medical, chemical and symbolic. Of course, these special faces are adapted to but few professions or trades and the standard typewriter meets most planograph requirements.

A good 24# Ledger makes an excellent original, it has a hard surface, and will stand erasing without roughing up. Soft finish papers should be avoided for a "master" or original copy as any slight imperfection shows in the finished print.

The ribbon is important. If cloth, it should be of "light" or "medium light" inking and have a brown black base. A sharp, clean impression is essential for good results. Carbon paper ribbons give more uniform appearance than fabric ribbons, as they are not apt to clog such letters as "a", "e" "c", "d", etc. Practically the same clean, sharp results

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CITY OF BOSTON
FROM THE FIRST SETTLEMENT
TO THE PRESENT TIME
IN TWO VOLUMES
BY NATHANIEL BENTLEY
OF THE BARR

VOLUME THE SECOND
FROM 1700 TO 1780
BOSTON: PUBLISHED BY
J. B. BENTLEY, AT THE
PRINTING OFFICE OF
J. B. BENTLEY, NO. 10, NASSAU ST.
1825

can be obtained by taking the ribbon off and using a hard finish carbon paper to make the original.

Errors should be carefully erased, trying not to smudge the other copy or rough up the paper. You can retype a sentence or paragraph and paste it into position, with full assurance that it will reproduce like the rest of the page.

It is important that the copy be typed with a uniform touch, as all light and dark variations stand out in the final printed copies. The machine should be kept clean and the ribbon, or carbon paper, replaced often enough to insure the whole job being of the same density of blackness.

A good typist, with an even touch can obtain satisfactory results on an ordinary standard typewriter, but some slight variations are bound to occur. To overcome this, there are completely and partially electrified typewriters with a motor which controls the key tension or impression of the type on the paper.

Planograph printing reproduces everything on your original copy so you must be sure that it

is sharp, clean cut, and of the same blackness throughout.

Sometimes it is desirable to "justify" the copy or have an even right hand margin as in printing. However, some people feel typewriting is much more readable when evenly spaced between words, with the resultant uneven right margins. One method of counting the extra spaces to "justify" or even the right margin may be seen on page 29a.

One of the principal advantages of Planograph printing is its flexibility through reduction or enlargement of the copy. Examples of reductions in varying percentages for three common type faces are shown on pages 27a - 29a.

When copy is reduced, it has to be typed in proper proportion. The way to estimate this is shown on page 35a. Also see page 30a for information on "How to Estimate Finished Copy Sizes". The chart shows the approximate number of words on a given size sheet and at a specified percentage of reduction.

"Master"sheets for typing are available

from some planograph printers. A specimen "master" sheet, which at 65% reduction becomes a 6 X 9, is shown on page 31a.

Line drawings are reproduced directly from the original, at facsimile, enlarged or reduced size.

Wash drawings and half tones have to be screened and will be discussed later.

Hand lettering may be done directly on the original or stripped into position. To avoid additional expense, this work should take the same percentage of reduction as the balance of the copy.

Good "pulled proofs" of new type set make acceptable planograph originals. This may be an entire piece, a title page, cover, or captions - whatever you require.

Previously printed matter may be in its original form or pasted up as desired.

Hand writing, insofar as possible, should be of an even blackness and written in India ink on a good white paper.

Any of these various originals may be enlarged, or reduced, combined with one another, or used alone.

B. HALFTONES

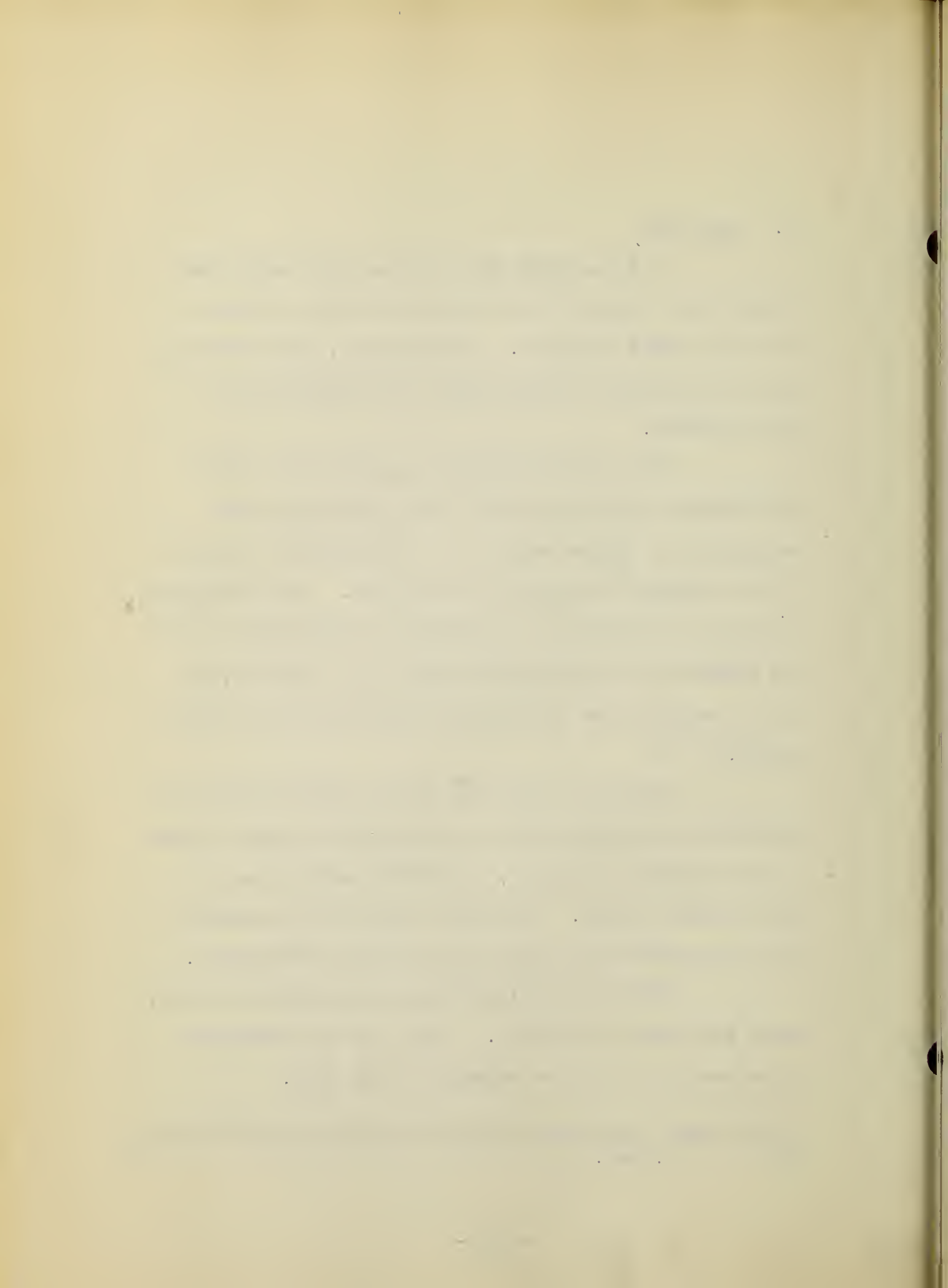
In planograph printing the best half-tone results are obtained from originals which present a rich and clear contrast. Photographs, wash drawings and all halftone subjects have to be screened for this process.

"The halftone-screen negative for offset lithography must contain all the gradations from highlight to shadow which will reproduce the copy as it is intended to appear on the paper. No re-etching, tooling or burnishing is possible on the offset plate to improve the reproductive values of a picture, as is so readily done on halftone plates for the letterpress." (1)

Particular care should be used in preparing halftones for photo-offset lithography as every defect in the original shows up, sometimes more plainly, in the finished print. Negatives used in photoengraving are practically useless for offset lithography.

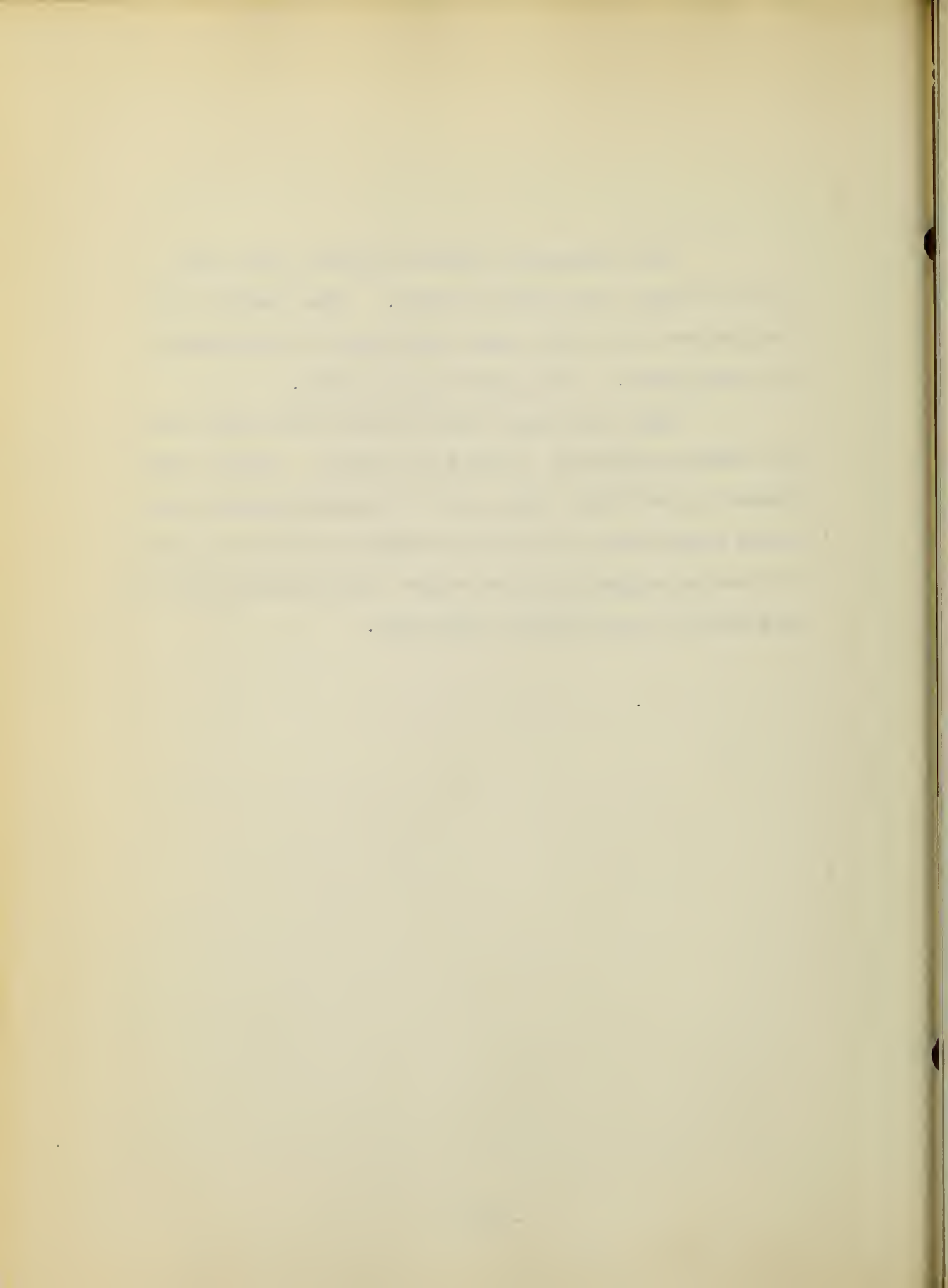
Halftone negatives for planograph are either made wet plate or on film. They are then stripped into position with the balance of the copy.

Martin Heir, Twentieth Century Encyclopedia of Printing,
(1) p. 326.



The planograph process prints a fine half-tone on almost any grade of paper. Good results are secured even on rough stock, something not attainable by letterpress. See pages 17a, 32a - 34a.

Some planograph printers have the facilities for making halftones in their own plant. Making halftones is particular work, and the halftone screens are quite expensive, and other planograph printers are glad to have an engraving house assume the responsibility of getting out good halftone negatives.



C. ART WORK AND DRAFTING

Planograph printing presents few barriers for art work.

With no electrotypes, cuts or rules to run up his costs, the printing buyer can use art work somewhat lavishly. Wash drawings, photographs and other halftones have to be screened. The planograph process softens the drawing, but offset halftones faithfully reproduce high lights and shadows.

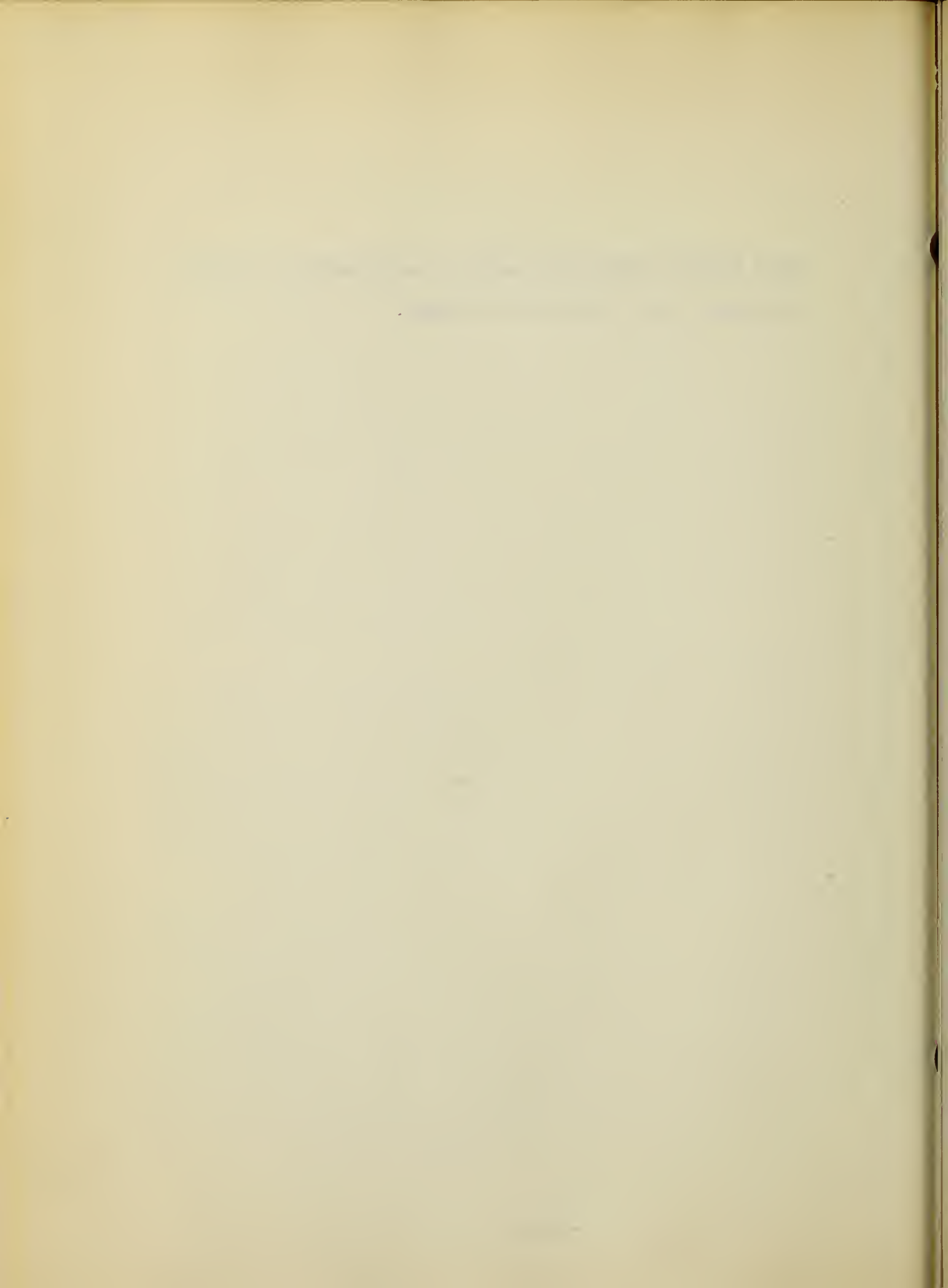
Drafting covers a particularly large field in planograph printing.

Sketches, graphs, hand lettering, maps, forms, cartoons, line and mechanical drawings of all types are reproduced directly from the original and in whatever size is desired. This type of work may be drawn right on the originals or on separate sheets and pasted up.

Usually art work and drafting is finished and the copy ready for the camera when originals reach the planograph printer. Sometimes, however, he is asked to letter in captions, paste and rule up copy, and in general complete the layout for production.

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JOURNAL
OF
THE
ROYAL ANTHROPOLOGICAL INSTITUTE
VOLUME 18
PART 1
1888
LONDON
PUBLISHED BY THE INSTITUTE
1888

Most shops, therefore, have art and drafting ability available for a reasonable charge.



CHAPTER 3

MAKING OF NEGATIVES

Now the completed originals are ready for the camera. Once the copy has been photographed, little can be done in the way of making a change.

The best results are obtained from copy which readily lends itself to photography and the sharpest finished prints come from photographically reducing the size of the originals, though the copy may be "shot" at the same or an enlarged size. It is also possible to vary the percentage of reduction on any section of the copy, but it should be remembered that each variation requires a separate negative and means an increase in cost.

Good, sharp black and white originals, of course, reproduce the best. This type of work is usually photographed on paper negatives, though sometimes film is used.

Timing of the camera "shots" varies with the type of copy. For this reason line work ordinarily is photographed by itself. If halftones are to be included, space is left for them.

Halftones, as already noted, have to be screened. Halftone negatives are made by the wet plate process or on film and are then stripped into proper position with the rest of the copy.

Special treatment has to be given colored copy. It is scanned by an expert operator, who decides whether the colors necessitate the use of a color filter and if the negative is to be made on panchromatic, orthochromatic or the regular photographic paper. Most colors can be handled so as to give the proper tonal qualities but, insofar as possible, colored copy should be avoided, for planograph originals.

Planograph paper and film negatives are developed in the usual way. Then they are sent to be "masked" and laid up, prior to being transferred to the zinc printing plate.

The finished negatives are next "opaqued", meaning that pin holes and other slight imperfections are painted out. A small amount of retouching can be done on negatives, but this is expensive and unnecessary if due care was given to preparing

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BOSTON: PUBLISHED BY
J. NEALE, AT THE
CITY OF BOSTON, 1790.
BY
J. NEALE, AT THE
CITY OF BOSTON, 1790.

the original copy.

This job done, enough negatives to fill a press plate, usually eight or more, are stuck into position on a layout sheet of opaque or masking paper. The opaque paper is cut away on the back, exposing the "pictures" or printing area of the negatives, and the form is ready to be transferred to the offset press plate.

Another method of securing a negative is to print it with one exposure in a vacuum printing frame, using Van Dyke negative paper. Washing in plain water and the application of a fixing solution prepares this Van Dyke negative for transference to the offset plate. Work handled by this method must be reproduced facsimile, with absolutely no change in size.

Planograph press plates vary in size. The smallest sheets some presses handle are 11 X 17. From that they run up to forty-four x sixty-four.

Negatives are easily stored for future use, as they occupy very little space.

C H A P T E R 4

MAKING OF PLATES

The introduction and use of the metal plate marked a great advance in offset lithography. The printing plate is about the thickness of cover paper or approximately .014 of an inch.

Such a plate is, of course, quite flexible. Its thinness is no obstacle as it prints from a plane surface.

Both zinc and aluminum are used for photo-offset or planograph plates, though zinc is the more common.

A lithographic stone absorbs and holds water but this is not true of metal. Therefore, the zinc plate must be grained on one side or covered with closely connected pits. This grained surface is as smooth as ground glass. The tiny pits or reservoirs will hold the picture or the type matter in the form of greasy ink and repel water, and the blank spaces repel the ink and hold water.

Some planograph printers grain their own plates, though the majority buy them all grained and ready to receive the transfer. This is accomplished by making the printing plate sensitive to light with

a surface coating of bichromated albumen solution.

As this coating must evenly cover the plate, it is placed in a whirler and rapidly revolved to remove the surplus solution and spread an even coat to all sections of the plate. It is dried, in this same operation, through the application of heat.

The plate next goes to a specially constructed printing frame, built for lithographic work. After the negative has been put in position on the plate, the frame is closed and a vacuum pump removes the air, bringing the negative and plate into absolute contact.

Sharpness of reproduction depends on obtaining a perfect contact, otherwise there is no advantage over the hand transfer method. The vacuum frame is now put in vertical position and a strong white light projected on the negative for a few minutes. This light penetrates thru the transparent portions and affects the bichromated coating so as to make it insoluble in water. The next step is to remove the plate from the frame and evenly cover it with chalk litho ink, place it in a trough of water and gently rub with cotton wool. This removes the

ink from those portions of the plate not affected by the light, but allows the ink to remain strongly affixed on the balance of the plate.

The plate is removed from the water, gummed up, and inked in the customary lithographic manner. From here on, the process conforms to regular offset printing.

Photo-mechanically transferred plates are far superior to hand transferred plates. The definition is much sharper than it is possible to obtain by hand. Also, the photo-composed plate will give a press run about four times that of a hand transferred plate. As long as any grain remains on the photographically produced plate it will print.

The shorter life of the hand transferred plate is due to the fact that when the hand method is used the subjects are only on the surface of the grain.

The light sensitive solution on the photo-composed plate works through to the base of the grain. When affected by light it is insoluble, right to the base of the grain, and unlike the hand transferred plate will not spread.

Some plants are experimenting with deep-etch offset. Deep-etched plates are etched slightly below the surface, really giving intaglio prints. This type of etching gives greater sharpness to type matter and increases the life of the offset plate. For this reason deep-etched plates are commanding almost universal attention and probably will come into more common use, particularly on long runs and color work.

Offset plates are ground, reground, and used over and over again.

In some sections it is possible for the planograph printer to have his plates made by a house specializing in getting out offset lithographic plates. The great majority, however, do their own photo-composing.

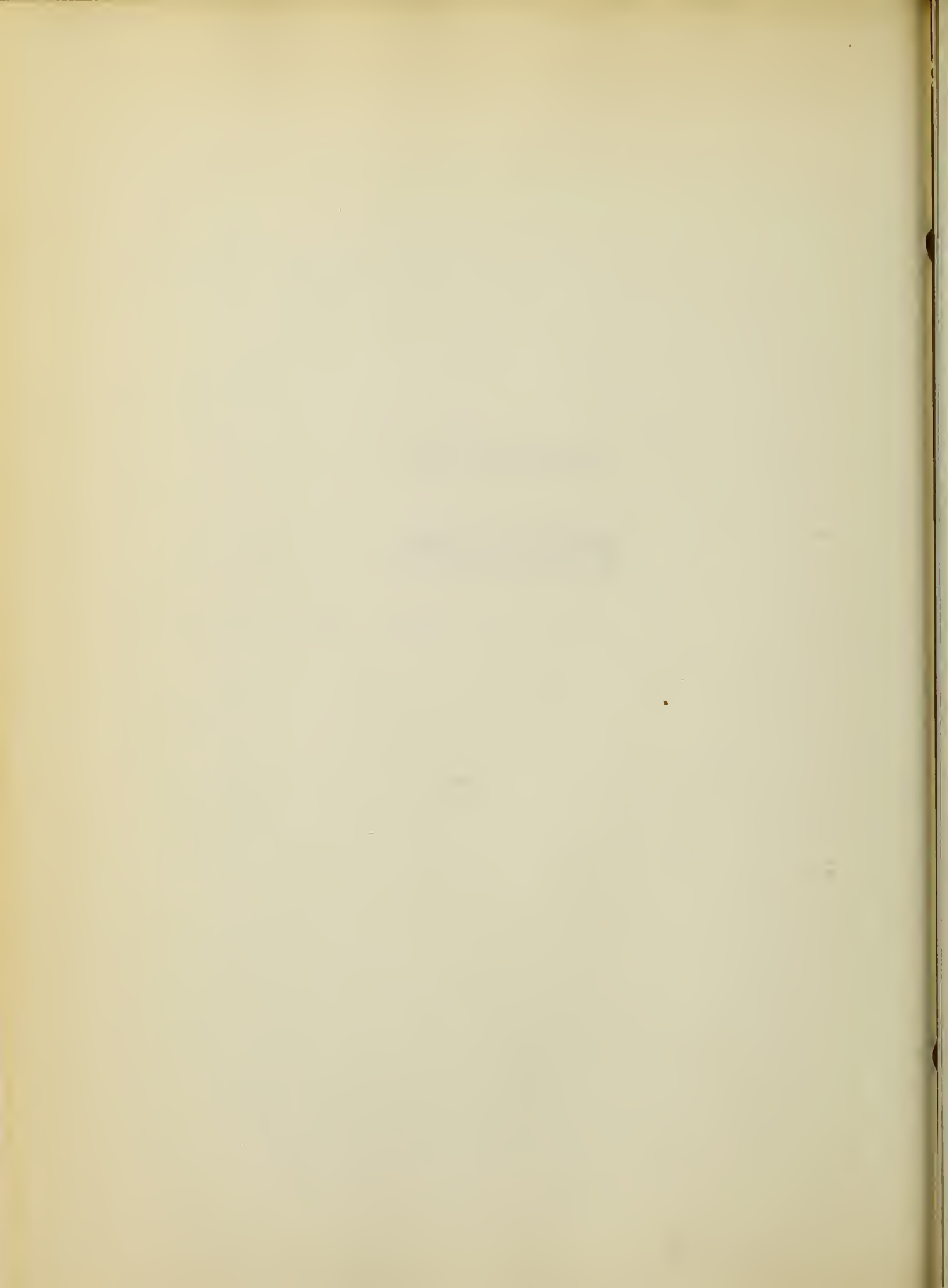
CHAPTER I

The first part of the book is devoted to a general survey of the history of the world, from the beginning of time to the present day. It is divided into three main periods: the prehistoric period, the classical period, and the modern period. The prehistoric period is the longest, and is divided into the Stone Age, the Bronze Age, and the Iron Age. The classical period is the shortest, and is divided into the Greek and Roman periods. The modern period is the longest, and is divided into the Middle Ages, the Renaissance, and the modern era.

The second part of the book is devoted to a detailed account of the history of the world, from the beginning of time to the present day. It is divided into three main periods: the prehistoric period, the classical period, and the modern period. The prehistoric period is the longest, and is divided into the Stone Age, the Bronze Age, and the Iron Age. The classical period is the shortest, and is divided into the Greek and Roman periods. The modern period is the longest, and is divided into the Middle Ages, the Renaissance, and the modern era.

C H A P T E R 5

SELECTION OF STOCK



"It has been said that a civilization may be judged by its paper industry. However that may be, the fact remains that paper and ink have contributed more to progress than anything else." (1)

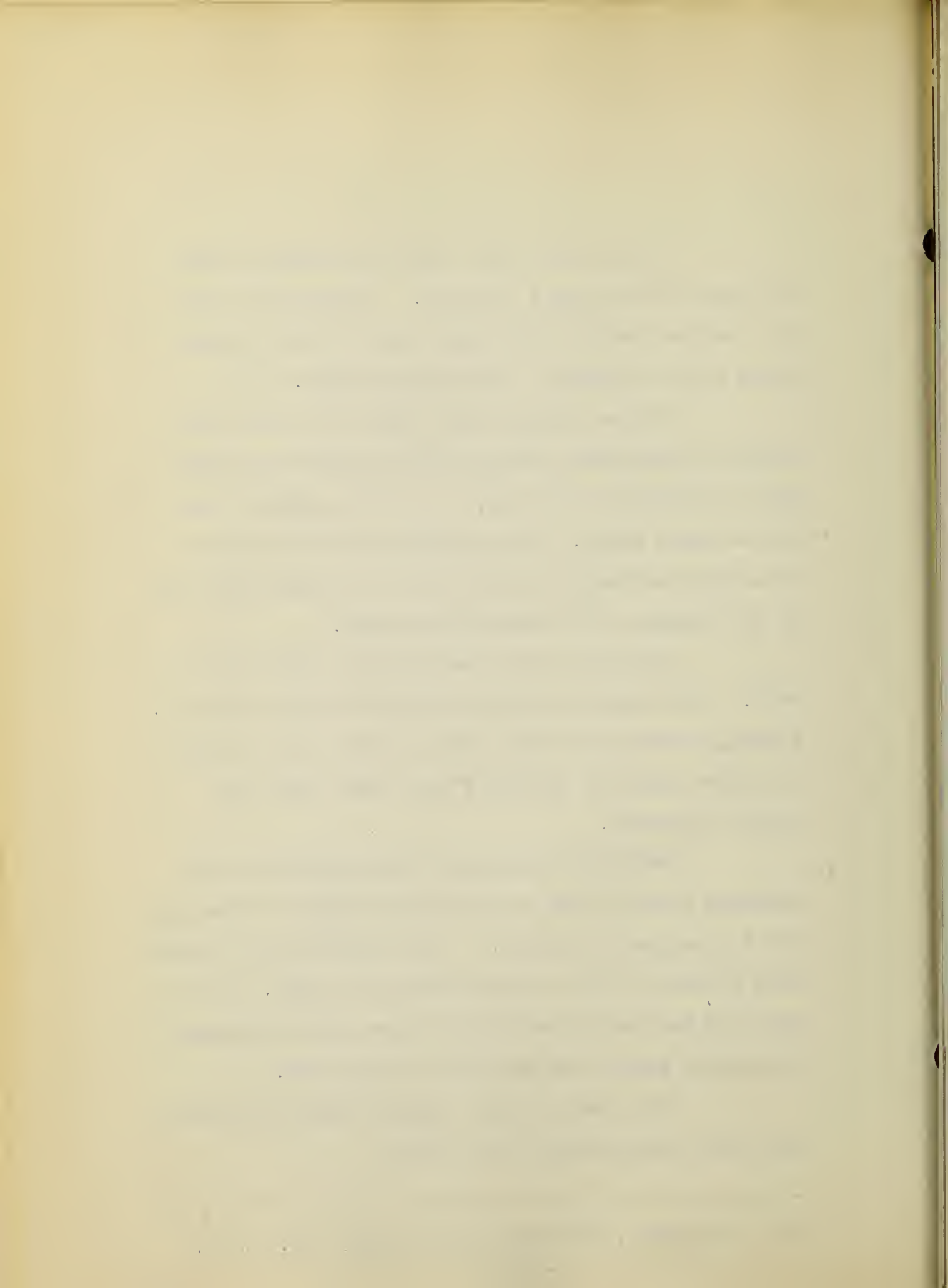
We have already seen that one of the economies of planograph printing (photo-offset lithography) is "ganging" the work, or putting several jobs on one press plate. This necessitates the choice of a paper suitable to the needs of the majority, and to the process, for standardized usage.

All papers are classified as either hard or soft. Soft papers are more absorbent than hard ones. Sizing, usually made from rosin, makes a hard finish - a stiffer and more resistant paper that takes ink without blurring.

Excellent results are obtained from a 20# sulphite bond for one sided work and 24# for "work and turn" planograph printing. These papers are a medium hard finish and fall in the bulk paper class. Offset paper of 60# and 70# weight are also used as standard planograph papers for one or two sided work.

These are all dull papers, easy on the eyes, and take good halftones and solids.

(1) Lithography, The Senfelder Company, Inc. p. 13.



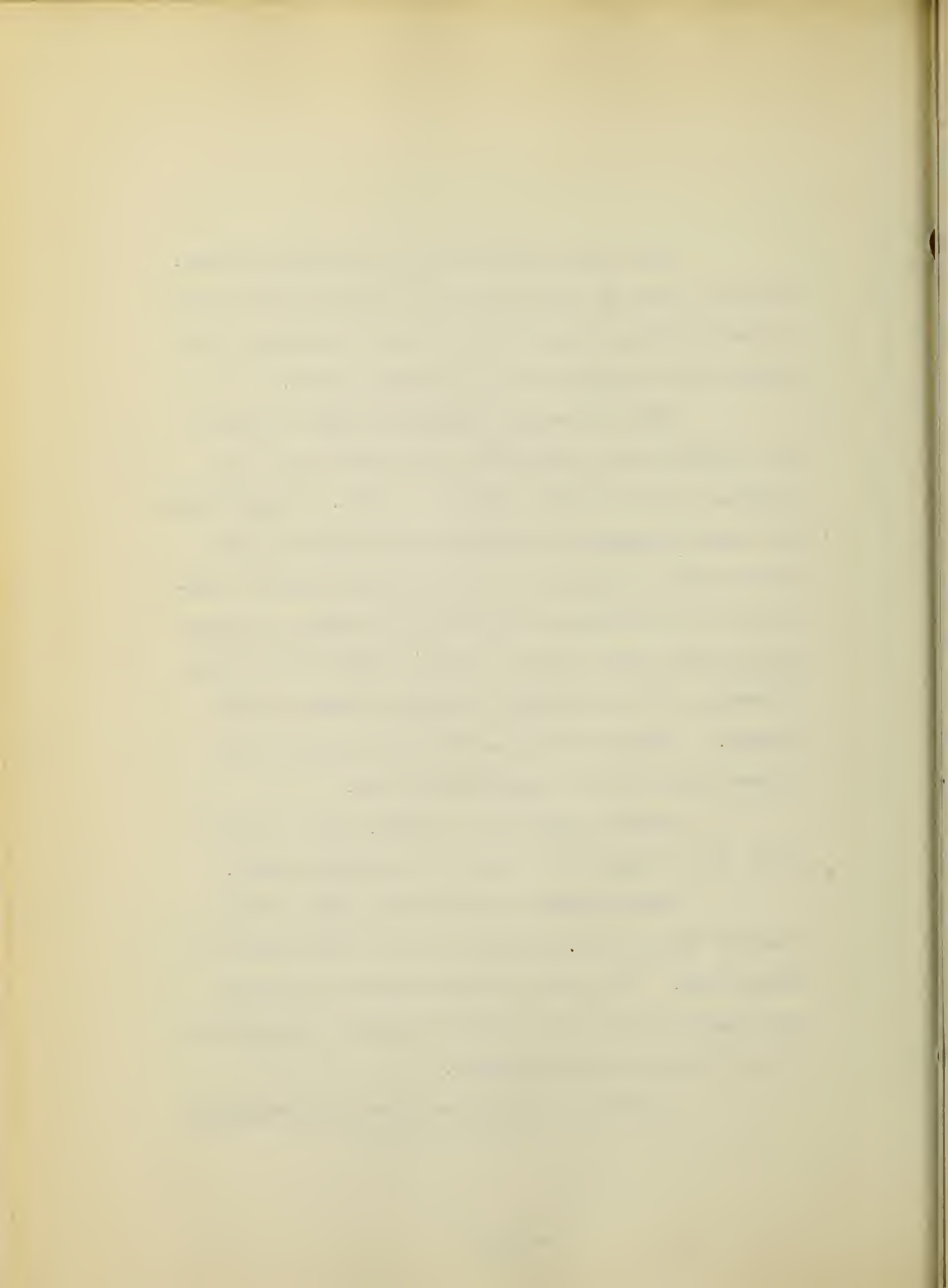
They bulk sufficiently for mailing pieces. However, they are light enough in weight to meet the minimum postage requirements though appearing to be heavier than regular relief printing stock.

While these are standard stocks selected for multiple job planograph plate printing, this process is by no means limited to them. Practically any stock ranging in weight from 9# bond to 5 ply Bristol can be run on an offset rotary press. However, due to the use of large press plates, containing several jobs, if other than a standard stock is selected, it is necessary to make an extra stock charge. Sometimes this additional expense item throws the work into regular printing.

Another advantage of offset paper is the fact that it does not crack or chip when folded.

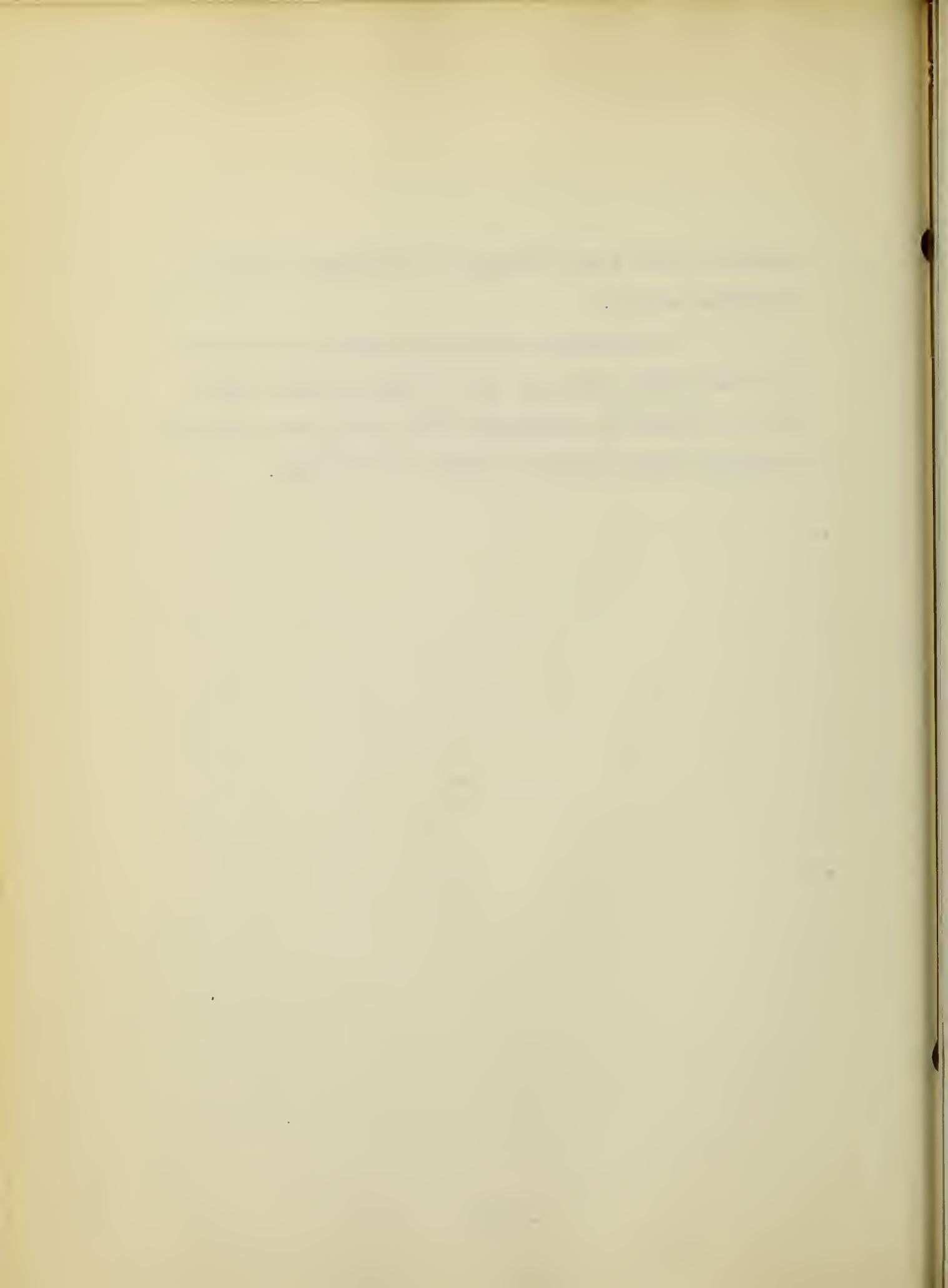
Coated papers obtain their extra smooth surface through the application of a thin layer of china clay. This type of paper takes ink easily and clearly but is not suited to offset lithography if the finish rubs off easily.

Tag cloth is sometimes used in planograph



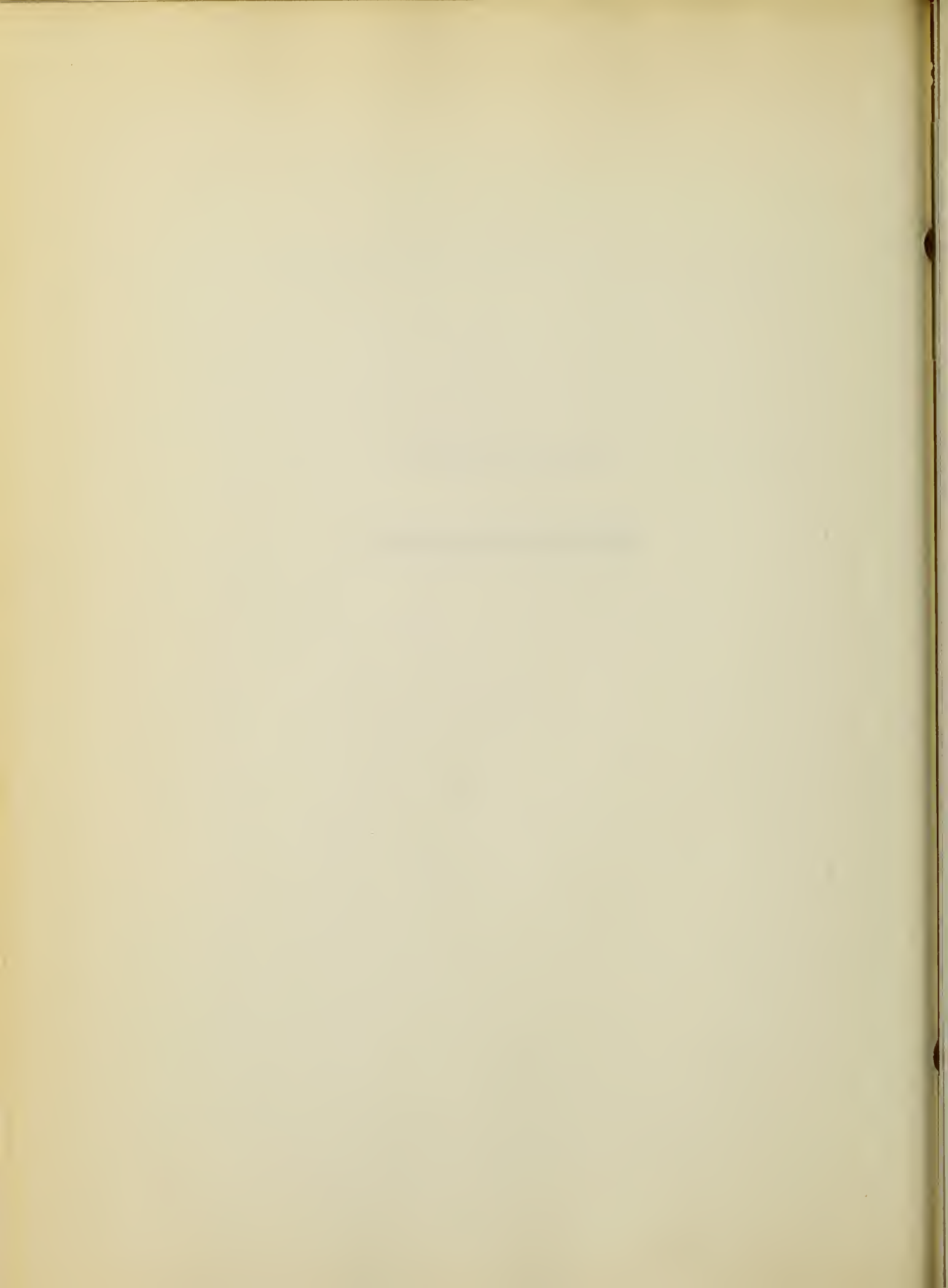
printing when great durability is desired for the finished prints.

In summary, nearly any stock may be used for planograph printing on an offset rotary press, but it should be remembered that other than so-called standard stocks carry an extra stock charge.



C H A P T E R 6

PRINTING AND FINISHING



A. PRESS WORK

While there has been continuous development in photo-offset lithography, its greatest growth has come since the advent of the rotary offset press. Speed is an essential for profitable printing production and offset rotary presses furnish that speed.

The carefully developed and inked plates are quickly locked into position on an offset rotary press. No expensive time is spent on make-ready or lock-up. Ease in changing the plates is also a decided advantage, particularly on short runs.

The printing trend today is toward rotary printing - a press that prints with every revolution of the cylinder - in opposition to a flat-bed press, which requires two revolutions to print a sheet and runs at half or less the speed of a rotary. Size for size, an offset rotary press should deliver two and a half times as many sheets as a flat-bed letter-press.

On offset, the metal plate does not contact the paper as is the case with type on a letter-press, it rather transfers the printing area to a smooth

rubber-covered cylinder, which in turn gives off the print. Offset printing has a pleasing appearance, softened by the rubber blanket actually making the print.

For this reason an offset is sometimes called a "rubber stamp" press.

A further advantage on planograph work is the thin layer of ink deposited by the offset press. This fills the pores of paper without leaving a considerable ink residue to dry. Offset dries quickly because of this thin ink film.

Color work is done by a number of planographers, but in the main they feel this class of work still belongs to the lithographer. There are indications, however, that planograph is rapidly breaking into the color field and will make great strides when it becomes universally possible to obtain more accurate color register on an offset rotary press. Color work usually commands a higher price and gets a longer time for delivery.

At the present time, though, black and white still dominates the planograph field.

B. BINDERY FACILITIES.

Planograph printing can offer to a buyer of printing all bindery facilities: folding, all kinds of punching, round cornering, stapling, collating, all types of binding, banding, mounting, padding and stitching.

"In the bindery, offset has advantages which are traceable to the facility and economy with which work can be duplicated on the press plate for running in multiples. There is a definite saving in collating, for it costs less to gather sheets run four (or more) up than those two up.

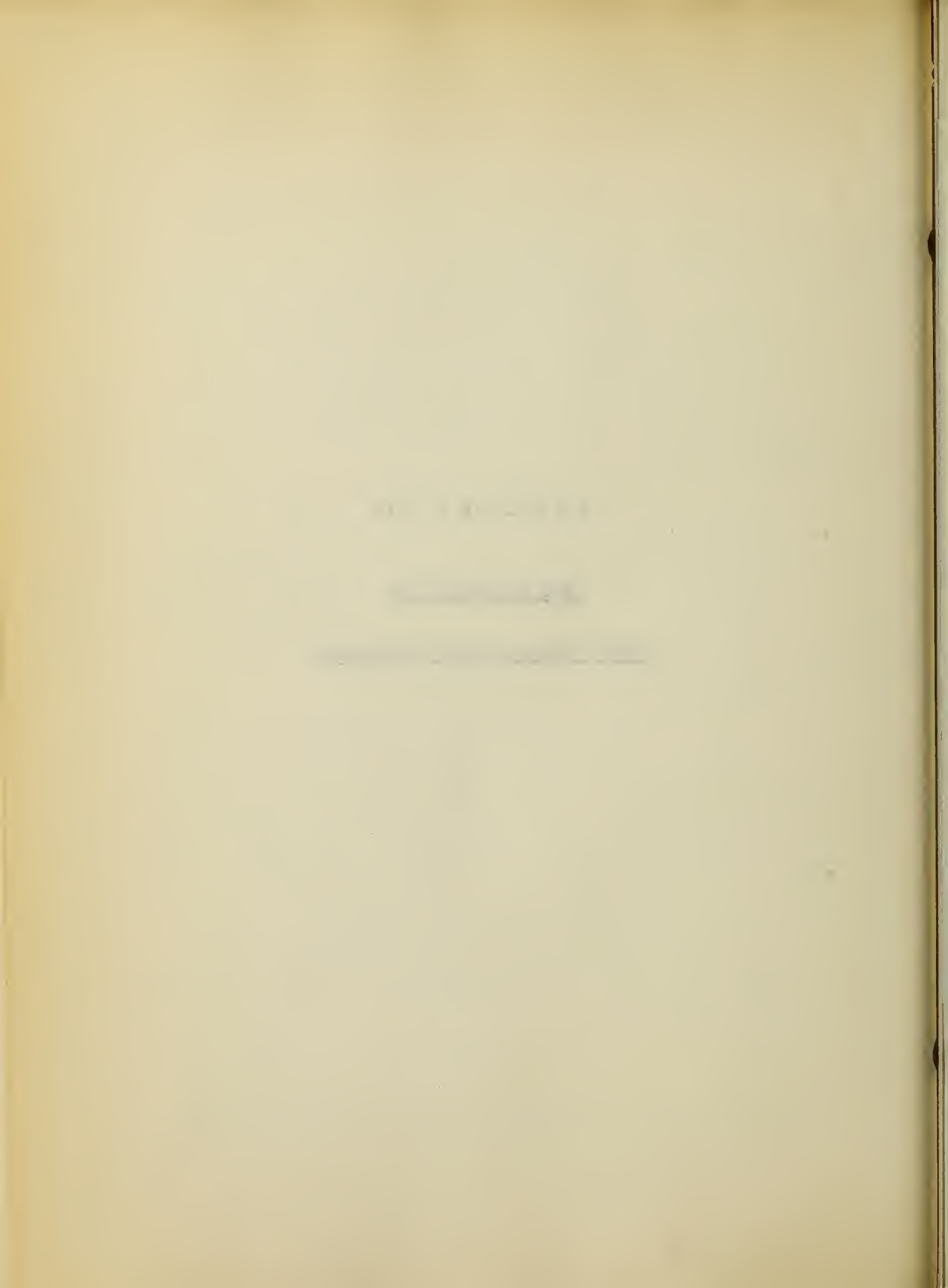
"Offset offers another decided advantage in the bindery. Because of the thin film of ink laid on the sheet by the offset process, drying time is reduced and folding operations facilitated. Some concerns take work off the offset press to run it immediately through their folders without fear of smudging or smearing as would be the case in letter-press work." (1)

(1) Commercial Printing by Offset, Harris Seybold Potter Company, p. 21.

S E C T I O N I V

COMPARISONS WITH

OTHER REPRODUCTION PROCESSES



A great deal has been said about planograph and its adaptability here and there.

There are so many variables in planograph printing, it is practically impossible to give prices covering all types of work. We will consider prices for one original $8\frac{1}{2}$ X 11, printed in black ink on one side of a standard 20# bond, as furnished by planograph printers in different geographical sections of the country.

	A	B	C	D
First 100	1.25	2.00(1)	2.00(2)	2.00(3)
Add'l 100's.		.30	.25	.30
200 - 400	.25 per C			
500 & over	.20 per C			

- (1) Give a special price on large runs.
- (2) Have a lower price for educational work from schools and colleges.
- (3) Minimum charge \$ 2.50

HALFTONES

A	B	C	D
2.00 average price	2.50 up to 5 X 7 Quotation on larger sizes	3.00 minimum square half tone .10 sq. inch	3.50 min. to 35 sq. inch 5.00 above $7\frac{1}{2}$ X $9\frac{1}{2}$ Quotation on larger sizes

SILHOUETTING HALFTONES

Subject to quotation	Subject to quotation	3.50 minimum .12 sq. inch	Subject to quotation
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These prices are for one original only, several originals usually give a more favorable price. All work requiring preliminary preparation, special stock, printing on both sides, any bindery work or special treatment is subject to quotation as there are so many variables that enter into each job.

Now, let us consider its chief opponents in the reproduction field:

Photostat - originals, like planograph, may be anything that will photograph at what size is desired. The relatively high cost of photostat paper places multiple copies out of reach, inasmuch as the standard charge is 25¢ for each 8½ X 11 sheet.

Blue Print - requires a transparent original which can be reproduced in facsimile only, and on the familiar blue and white paper, which precludes its use for processing such things as sales and advertising pieces, books and a myriad of other commercial items. The cost runs around 3¢ per square foot.

Direct Positive Prints - such as Black and White (black line) and Ozalid (red line) afford no size flexibility through enlargement or reduction, also, the original must be on a transparent sheet as in blue

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printing. This type of contact print is low in cost when a very few copies are required and gives acceptable results on line work, but halftones are precluded. The prints lack that clearness and sharpness generally required in printing work.

Other Positive Prints from negatives - Blue Line and Brown Line, made from a Van Dyke or a camera negative fulfill practically the same mission as B & W and Ozalid prints. When camera negative is used for the contact, of course, the size may be changed at will. This group is economical when but a few copies are required.

Mimeograph - the process which, until the advent of planograph, did most of the multiple copy work on lecture notes, text books, instruction sheets, price lists, and similar items. Copy must be cut by typewriter type, or drawn with a sharp instrument on a stencil. The prints are of relatively low grade as to sharpness and are put on a very inexpensive and absorbent paper. Copy preparation presents a definite limitation; also, there usually is a marked variation in the readability of the sheets as the

"roll off" increases. The cost on this work depends on the size of the run, and for a small quantity, that is to be read once then discarded, where quality is not paramount, - such as examination questions for a class of 50 to 75 - mimeograph still fills an economic need. However, if there are several originals, or if the finished sheets are to be kept, planograph becomes a very keen competitor for the business.

Mimeograph Prices Recommended by M.A.S.A.
(Mail Advertising Service Association) for general use in Boston.(1)

		Pica Type	Elite Type
Cutting Stencil - 25 lines		.85	.85
Add'l lines		.02 each	.02 each
Roll Off		Paper Mimeograph	Bond
1st 100	.50		
2nd 100	.30	100 - 500 .25 per C	.40 per C
300-400	.25	500 - 1000 .20 " "	.30 " " (2)
	per C		
500-800	.20		
	per C		
1000	2.50		
Add'l 100's	.20		
	per C		

(1) These prices are local and are not adhered to by all letter shops. Other prices prevail in other sections.

(2) Plus 15% for slip sheeting.

Multigraph - is limited to type matter and ordinarily used for letter reproduction. This process gives a better grade of work than mimeograph and is well adapted to sales letters, which may be personalized with a "fill in". The price is above that of planograph; the copy must be set in type on the multigraph drum; there is no opportunity to use sketches or drawings; there is a very definite page or sheet size limitation and copy can be reproduced at 100% size only.

Multigraph Prices Recommended by M.A.S.A.
for general use in Boston.

Composition.

Elite Pica

8¢ per line 7¢ per line

Roll Off.

	Short Letter to 15 lines	Medium Letter 16 - 30 lines	Long Letter 30 lines and over
100	1.00	1.00	1.00
200 - 300	.30 per C		
400 - 1000	.25 per C		
200 - 500		.30 per C	.35 per C
500 - 1000		.25 per C	.30 per C
1000	3.00	3.50	4.00
Add'l M	2.00	2.50	3.00

These are local prices and not adhered to by all letter shops. Prices vary in other sections.

None of these processes possess the flexibility of planograph as to copy preparation and practically none give the same grade of clean cut results.

Letterpress - work must be type set. Halftones, sketches, forms and drawings require cuts, rules or electros. This process has as many variables as planograph, that enter the price situation. However, when the copy can be typewritten, pasted up from previously printed copy, or contains a large number of halftones, the work leaves the letterpress field for planograph or photo offset lithography.

You cannot definitely state all jobs of a certain size will receive the same planograph price. There are many items to be considered, as in regular printing, and as has been mentioned.

A few typical cases will suffice, but it must be remembered that these prices apply only on the jobs mentioned. If the work has any special treatment or is for a large quantity, always get a definite quotation.

Case I "A Children's Workbook", the specifications for which are as follows:

1. Number of pages: 48 printed on one side only.
2. Size of type page: 45 ems x 65 ems (= 32 lines).
3. Basal type: 16 pt leaded with 8 pt.

The general style of the text matter is open and consists of short paragraphs and simple displayed units. A large number of line engravings appear throughout the pages. These are all free from solid areas and are generally of simple nature.

4. Size of sheet: $34\frac{1}{2}$ x $48\frac{1}{4}$
5. Paper page: $8\frac{1}{2}$ x 12"
6. First impression: 10 M.

As printed by the regular relief process from electrotpe plates the manufacturing cost is as follows:

1. Cost of composition and plates, including engravings, approximately \$ 500.00
2. Cost of printing \$ 108.00

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BAR: 773-936-5000

CLUB: 773-936-5000
LOBBY: 773-936-5000

As printed by the planograph process the estimate of the manufacturing cost is as follows:

1. Cost of preliminary work, including photography and plates, and illustrations, \$ 80.00

This item is based on furnishing properly prepared manuscript for the planograph printer and the cost elements that must be considered in connection with the manuscript as follows:

The same amount of typesetting must be undertaken.

Proofreading is necessary.

The original drawings of illustrations must be pasted on the manuscript.

Type matter must be collated, spaced, and pasted to accomplish the proper arrangement of text matter. This work would necessarily increase the amount that would properly be chargeable to plates, and might reasonably cause a planner of printing to doubt the wisdom of doing the work by the planograph process.

2. Cost of presswork, \$ 245.00

While the presswork by planograph cost \$ 137.00 more than by regular relief printing, the saving in plate cost more than offsets the difference.

Case II An 8 page Illustrated Booklet - for a large manufacturer. To be printed in black ink, on two sides, page size 6 x 9, saddle stitched with self cover.

	Letter press	Planograph	
Stock	70# Offset	70# Offset	24# Bond
Printing Cost 10M	160.00	111.25	97.60
Add'l M	8.80	8.55	7.33
Preparation Cost			
Typeset	Included		
Typing original		4.00	4.00
Lay-up	Included	5.00	5.00

Halftones extra on all three.

Electrotypes extra on letterpress.

The major saving by planograph, is on the first run of 10,000, as the cost of additional 1000's is practically the same.

The job went to a printer, at the increased price, as the manufacturer felt the regular type fonts



of letter press would make a better appearance and create a more favorable impression on his customers than planograph reproduced from typewritten copy.

This particular manufacturer, however, uses a considerable amount of planograph printing on instruction books, sales and advertising pieces.

Case III. A school, that formerly mimeographed class outlines, lecture notes, texts, etc. now uses planograph printing with its better stock, better appearance and binding - for their work.

They figure mimeograph at 1¢ a sheet, size 8½ x 11, and still use it on runs of 200 or less. Letter press is favored for quantities of 5,000 to 10,000 if there are no halftones.

Case IV Another large buyer of printing said he favors planograph on runs up to 10,000 if there is considerable halftone work involved. Otherwise, there is no advantage in setting type and pulling proofs for planograph originals.

Case V City and town poll lists, which up until now have always been letterpress printed, present another use for planograph. If the type had to be

The following table shows the results of the experiments conducted on the effect of the temperature of the water on the rate of the reaction between hydrogen peroxide and potassium iodide. The experiments were conducted at different temperatures, and the rate of the reaction was measured by the volume of oxygen gas evolved in a given time.

Temperature (°C)	Rate of Reaction (ml O ₂ / min)
10	0.5
20	1.0
30	1.5
40	2.0
50	2.5
60	3.0
70	3.5
80	4.0
90	4.5

From the above table, it is evident that the rate of the reaction increases with the increase in the temperature of the water. This is because the rate of a chemical reaction increases with the increase in the kinetic energy of the molecules, which in turn increases with the increase in the temperature.

set, and then planographed, there would be no savings over letterpress, but if typewritten copy is acceptable for originals, a real saving may be shown on the finished job.

A list which was studied showed the following:

Page size 6 x 9, printed on two sides in black, saddle stitched with self cover.

	Letterpress		Planograph
	1st printer	2nd printer	
200 Copies	.94	1.00	1.09
price per page			
No. of pages	1100	1100	800
Total cost	1034.00	1100.00	872.00

This job was planographed, at reduced size. Great Primer typewriting was used for making the originals.

Case VI "Cost per Page of Planographing

and Printing in Different Editions

Specifications: 300 pages, 8 x 9½ inches; 700 words per page (ten-point type); sulphite paper of medium weight; folded and gathered sheets, unsewn, ready for binding.

Charges:

Planographing: based on an estimate from a reliable company for cost per page,

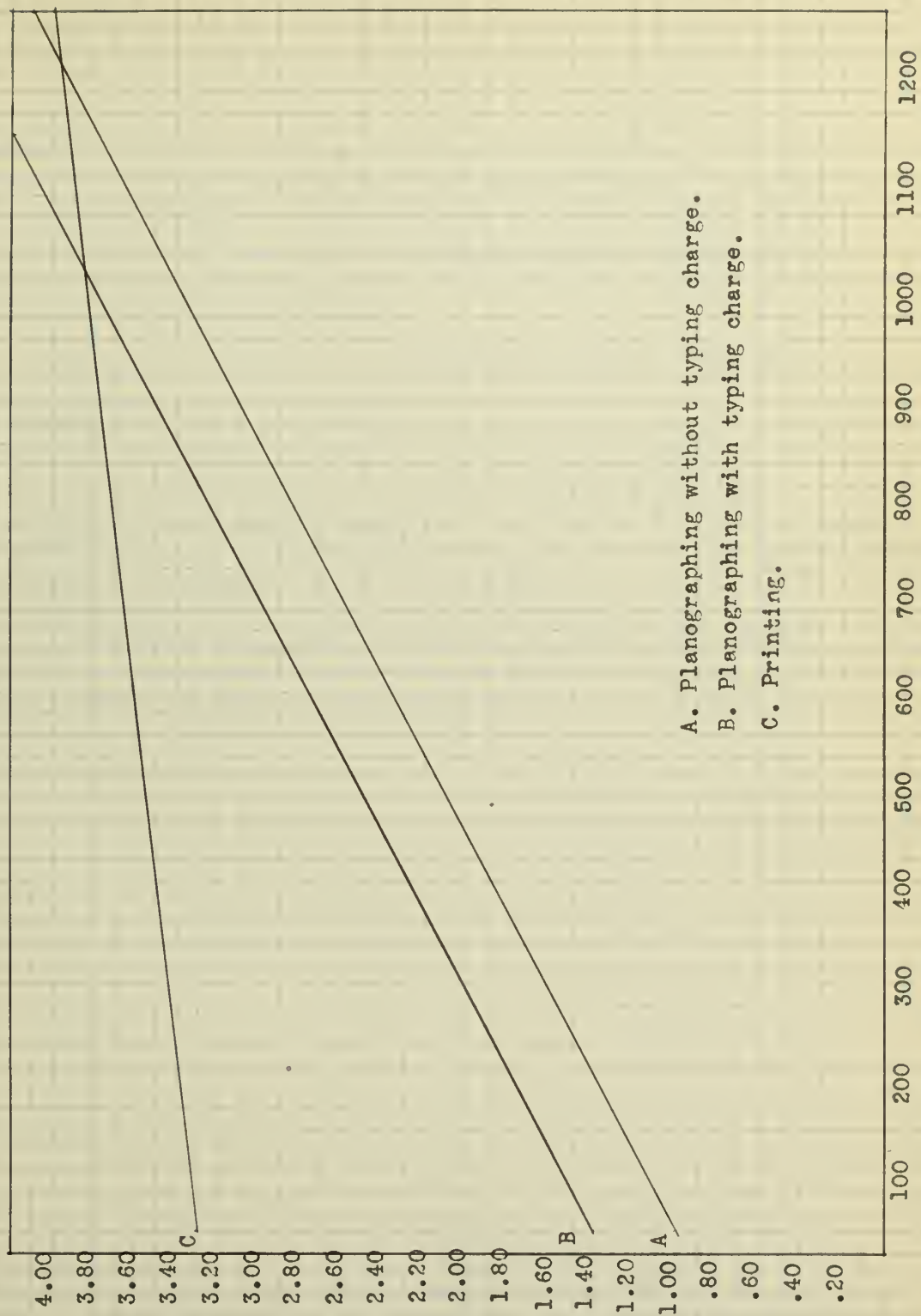
- A. Without typing charge, i.e. the cost of producing reprints or facsimile editions of source materials;
- B. With typing charge of \$.40 per page, i.e., the cost of producing editions of source materials or monographs of which the author's manuscript is not suitable for use as a master copy.

Printing: based on an estimate from a reliable company for cost per page (36 by 43 picas, Monotype 10 point on 12 point, either Number 36 A or 31E). Since type must in any case be set, the cost of reprints does not differ from the cost of original material." (See chart on the following page)

Case VII "Sliding Scale of Prices

for a Typical Book.

Specifications: 300 pages 8 x 9½ inches, 700 words per page, ten-point type, sulphite paper of medium weight (i.e., the style of this page); buckram binding.



A. Planographing without typing charge.
 B. Planographing with typing charge.
 C. Printing.



Charges:

Planographing: based on an estimate from a reliable company for cost per page plus a charge of \$.40 per page for typing.

Printing: based on an estimate from a reliable company for cost per page.

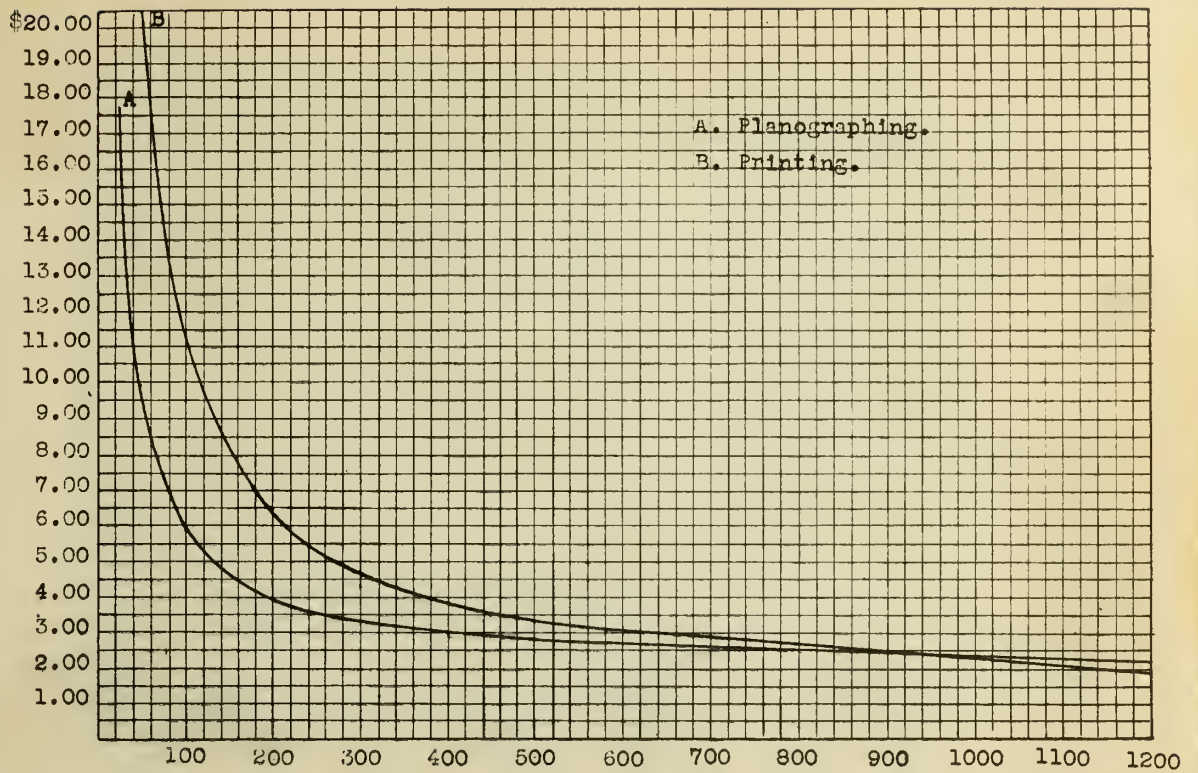
Alterations and corrections: no allowance.

Binding: \$.50 per copy.

Service charge: \$.75 per copy.

To cover wrapping, mailing, billing, etc. "(1)
(See chart on the following page)

(1) A Project for a Publishing Service under consideration by the Joint Committee on Materials for Research of the American Council of Learned Societies and the Social Science Research Council. pp. 7 and 8.





S E C T I O N V

CONCLUSIONS



It is results, not the process, that counts with the American public. If this were not true neither planograph printing, nor anything else would be able to break into a well established field, such as the graphic arts.

The present day calls very definitely for increased printing speed and this is being satisfactorily answered by the rotary offset press, which size for size, normally turns out two and one half times the production of a flat-bed letterpress.

"My purpose is to draw attention to the extent of the new competition, and to indicate trends.

"I speak first of planographic printing because the greatest strides have already been made in this field. Photo-litho offset is a huge factor in the printing business of the country and it is safe to say that the output of the 800 or 900 plants now operating, is equal to that of at least 3,000 or 4,000 average letterpress plants." (1)

Planograph printing, photo offset lithography, has found its way into nearly every department of modern business. Its general uses are practically

(1) Photo-Composing, Offset, Gravure, Brought Up to The Minute, Peede .

the same as letterpress, and some quite specialized ones have been developed. All bindery facilities are available for planograph printing.

One of the principle economies, also a reason for planograph's growth, is the flexibility of copy preparation. Another, the fact that no electrotypes, zincs, cuts or rules are used.

The customer can prepare his own originals for planograph printing - a typewriter, paste pot and tee square being his prime needs. Photographic reduction gives sharper prints, or may be used to get more copy without loss of legibility, on a page.

Professor Edward B. Greene in the Psychological Laboratory, University of Michigan, is doing some research of this latter point and writes in part:

"I have begun a study of the relative legibility of various typescript samples, but about the only results so far indicate that the differences between the samples are so small that ten or twenty minute tests show no reliable differences."

The samples Professor Greene used in his tests

were $8\frac{1}{2}$ x 11 pages of:

A. - mimeograph copy, in Pica type, having approximately 500 words on a page and

B. - planograph copy of Pica type, in reduced size, with approximately 800 words on the sheet.

This, of course, effects a real saving when a considerable amount of copy is involved, as the work is processed on a fewer number of pages.

Planograph printing, being a photographic process, faithfully reproduces without error the original as submitted.

Black and white copy reproduces best, though most colors are easily taken care of by using color filters or special negatives.

A major economy in planograph printing comes from the fact that you do not have to wait or pay for any cuts or electrotypes. Good halftones are secured on almost any stock by this process and the saving, in both time and money, on this one item often swings printing over to planograph.

Running several jobs on one plate, ganging the work, also means economy on stock to the printing

buyer.

Rotary offset presses turn out the work with great speed. An offset press deposits a very thin layer of ink on the paper, which means the finished prints can be handled almost immediately without fear of offset.

All bindery facilities are available for planograph printing.

When fifty or more copies of a letter, catalog, chart, graph, poster, advertising piece or other printed matter is required, it will pay to investigate planograph.

The entire planograph process stands for economy, in both time and money, with no sacrifice on the quality of the finished prints.

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October 28, 1932

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PRES. AND TREAS.
C. B. BACHELDER
VICE PRESIDENT
C. L. NUTTER
GEN. MANAGER
G. P. FLOYD
SEC. AND ASST. TREAS.

Boston Von Company
128A Tremont Street
Boston, Massachusetts

Gentlemen:

Last January, at the suggestion of a friend, I started taking your treatment for ulcers of the stomach from which I have suffered for fifteen years. At the time I was having a very severe attack, and after following the diet which comes with the tablets, I am happy to say from that day to this, I have never had any further signs of ulcers. Since then I have done nothing to take care of my stomach; in fact, I have done everything I shouldn't, but even with this handicap, the medicine has accomplished wonders for me.

I have recommended Von's Pink Tablets to three friends and they, like myself, have found relief through them. Only this morning I gave a young man your address, who will be in to get the medicine for his mother. It was my talking to him which prompted me to write you these few lines.

I am writing this of my own free will and you are privileged to use this letter or my name as often as you wish in any way that it will convince ulcer sufferers that they should at least try Von's Pink Tablets. If you ever have anybody who may be skeptical about taking your treatment, give them my name and phone number. I will be only too glad to tell them of my experience. Wishing you every success in your attempt at relieving suffering, I remain,

Respectfully yours,

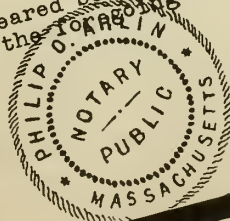
Charles E. Days

Charles E. Days

October 28, 1932

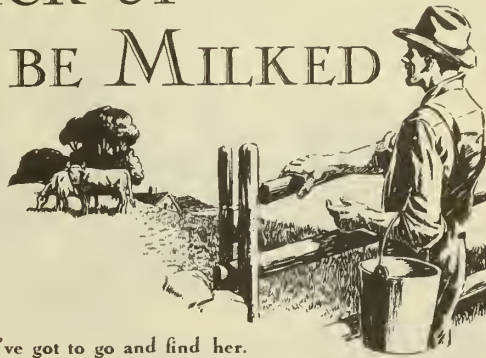
Suffolk
Massachusetts) ss

Then personally appeared before me, a Notary Public, Charles E. Days, who made oath that the foregoing is a true statement and affixed his signature thereto.



Philip O. Ahlin
Notary Public
My Commission Expires
March 23, 1934

A COW DOESN'T BACK UP TO BE MILKED



—you've got to go and find her.

Equally true of business—*we've got to go after it.*

• • • •

Unemployment? Yes. But most people are gainfully employed, and have money to satisfy their needs.

That being the fact, *there are possibilities of trading your goods for their money.*

• • • •

Of course, there are questions of quality, price, value, and so on—talking points, so to speak. Why not talk them over—by telephone?

• • • •

In making this suggestion, we are trying to boost our own business—but not at the expense of yours.

Our toll service enables you to present your talking points quickly, clearly, effectively. We recommend it in the belief that its value exceeds its cost; its use, therefore, *will be to your benefit as well as to ours.*

• • • •

We have a force of trained consultants who know something about general business, and all about how telephone toll service can be used advantageously in buying or selling campaigns. State your problem. One of them will analyze it and tell you whether—and if so, how—toll service can be effectively used. The advice is yours for the asking.

And, bear in mind these low rates for a 3-minute daytime number call: 25 miles for 25 cents; 64 miles at a 50 cent rate; 174 miles at a dollar rate. Lower rates for evening and night calls, and no tax on calls of less than 50 cents

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY

TELL 'EM AND SELL 'EM



There is a ratio between calls and sales. It may vary with conditions or circumstances, *but it's pretty constant as a general average.* This only goes to show that persistency—the formal name for stick-to-it-iveness—is still a fundamental of salesmanship.

• • •

As the next best thing to a personal call, consider the telephone call. You know your customer: if he'll see you in person, he'll talk to you by telephone. Intimate give and take is possible because, figuratively, you are sitting in his office.

• • •

Remember—your customer is as near as your telephone; sales arguments are as true over a wire as across a desk; telephone sales count as much as personal sales—and *cost less.*

• • •

We have a force of trained consultants, with a wide experience in toll sales campaigns. They can tell you whether what you want to sell or to buy can be effectively handled by the use of toll service. Their advice is yours for the asking.

And, bear in mind these low rates for a 3-minute daytime number call: 25 miles for 25 cents; 64 miles at a 50 cent rate; 174 miles at a dollar rate. Lower rates for evening and night calls, and no tax on calls of less than 50 cents

A NEW SERVICE FOR BUSINESS

A successful New England manufacturer tells us that he uses telephone toll-service in his purchasing department to even greater advantage than on sales. A variety of materials enters into his finished products. He buys as he needs them by "shopping around" by telephone.

• • •

In word-of-mouth bargaining, he says, there is *flexibility, speed, and actual saving* that is not possible through formal correspondence. Written specifications or confirmation may follow if desired.

• • •

It is our business to study the varied requirements of New England business. We would be out of a job if we did not meet them. In other words, *business must profit by the use of our service in order that we, ourselves, may profit.*

• • •

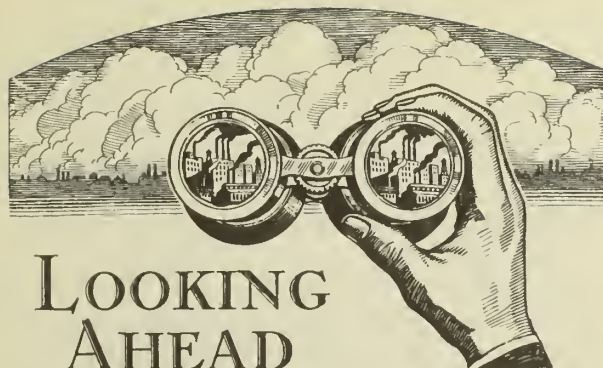
From this study we develop innovations and improvements. The teletypewriter, for example—typing by wire between two or more points—is an innovation to fill a need that word-of-mouth communication cannot satisfy.

• • •

If you have a buying, selling, or distribution problem which depends on good communication—and most of them do—we believe we can help you solve it economically and efficiently, if you will talk it over with one of our trained analysts. His advice may be had for the asking, and without obligation.

Call the local Telephone
Manager.

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY



LOOKING AHEAD

Low inventories in most lines of business point to the need of rapid communication to meet present-day business practices.

• • •

Like good field marshals planning their moves, sales and purchasing executives are getting ready for the inevitable up-swing. They know that swift liaison with factory, office, jobbers, dealers, salesmen, will be required. The telephone, more than ever before, will become the effective adjutant of the business executive.

• • •

We, on our part, have been busy devising improved methods of oral and written communication that can be adapted to the requirements of any purchasing or sales organization. Believing that wider use of these methods will help business recovery, we have organized a group of specialists with expert knowledge of various forms of communication and trained to apply them to the specific business they are designed to serve.

• • •

Business executives, large and small, are invited to make use of the services of this group, which may be had without charge by calling the local Telephone Manager.

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY

"YOU DON'T WANT TO BUY, Do You?"



No salesman would ever expect to get anywhere with that approach. Because he who adopts a defeatist attitude is licked at the start.

But a mind directed by *faith, courage, persistence*, is bound to influence other minds.

A telephone call complements a personal call and, when adequately planned, is sometimes even more effective.

Before you take up your telephone, visualize your customer, and carefully plan what you are to say. Write it down, if necessary, as good radio announcers do, and then it will have point, emphasis, and persuasion.

Select a dozen or more potential customers, ask us to connect you, and then tell your story.

You'll find that—

You can get to them almost instantly.

Your sales argument by telephone is as persuasive as if you were face to face.

You can get business by telephone at low cost.

And, bear in mind these low rates for a 3-minute daytime number call: 25 miles for 25 cents; 64 miles at a 50 cent rate; 174 miles at a dollar rate. Lower rates for evening and night calls, and no tax on calls of less than 50 cents.

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY

THE SEARCH OF A FOR B

A has something to sell. B has the money to buy.

Problem: Find B and effect the exchange to mutual profit. That's BUSINESS.

In the world of business the A's know the B's.

The difficulty lies in reaching them.

And at a cost that will not absorb all of A's profits.

B is naturally cautious about stocking up.

He's a bit troubled because, nowadays, so many who seek bargains hope to get "something for nothing." He knows it can't be done, and that volume without profit gets him nowhere.

Here's a suggestion to A:

Put on paper what you would say about your line to B if you were in B's office.

Then re-write it, boiling it down until every word has the desired emphasis and effect.

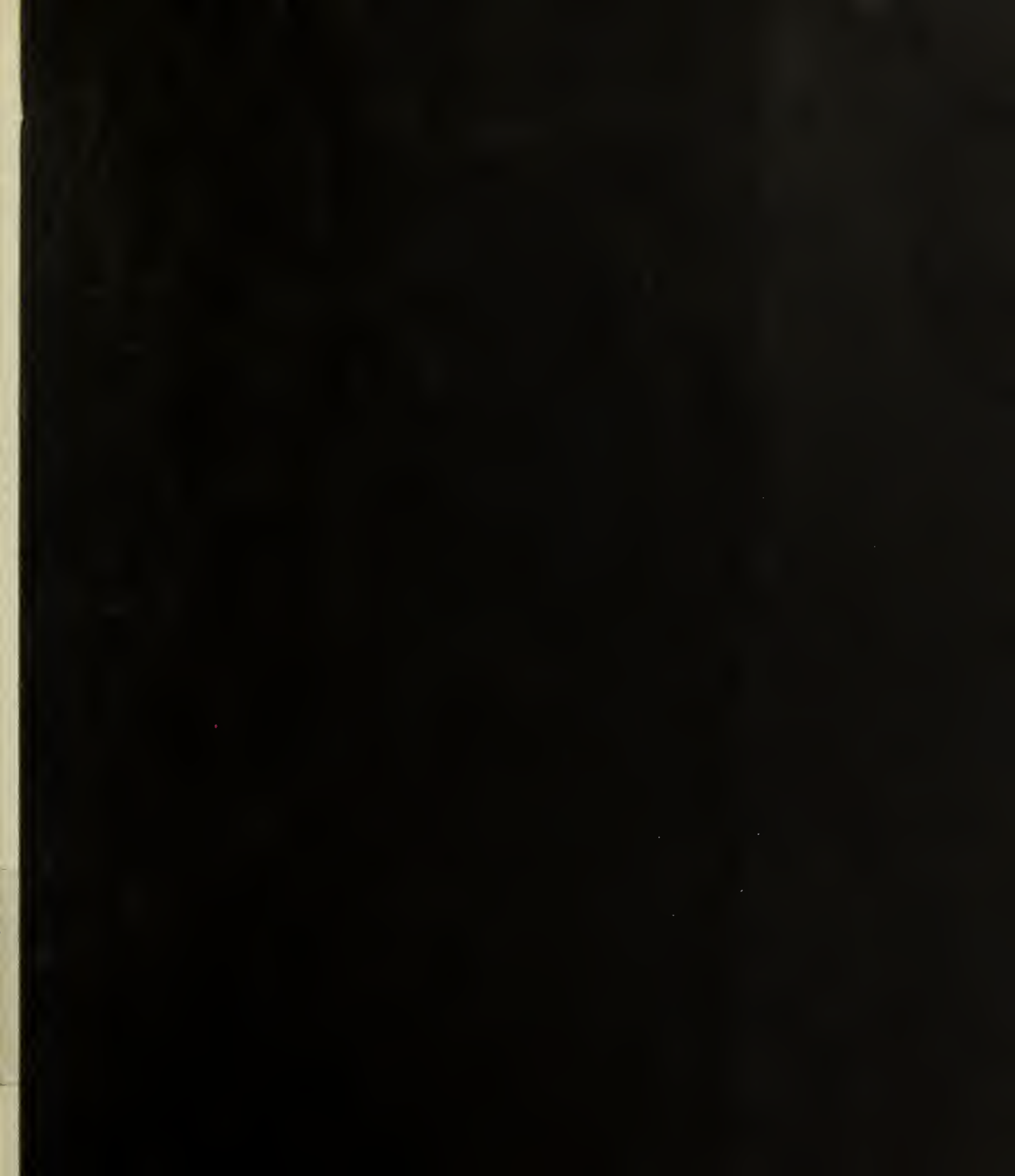
Write on another sheet the names and addresses of a dozen or twenty B's. Ask, or have your secretary ask "Information" for the numbers, and get them on the wire.

Then repeat to each B your prepared argument, and note the ratio of sales to calls.

What others are doing, effectively and economically, you can do. We have a force of trained consultants. They have helped plan various campaigns. Maybe they can help YOU, too. Their services are yours for the asking, and without obligation.

Call the local Telephone Manager.

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY



Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.
ATWATER-KENT GENERATOR ARMATURES				AUTOLITE GENERATOR ARMATURES				AUTOLITE GENERATOR ARMATURES				AUTOLITE GENERATOR ARMATURES				AUTOLITE GENERATOR ARMATURES			
5431	KEY		323	GAL-2006	ARMY	Ⓢ	37	GJ -2275	AIR	Ⓢ	85	GR -2051	AFIRE	Ⓢ	114	GYA-2057	AVER	Ⓢ	326
5702	KEEP	*	319	2055	ARDOR	Ⓢ	44	2283	ACRID	Ⓢ	72	2052	ALIAS	Ⓢ	103	2058	ASTRO	Ⓢ	371
5874	KING		321	2062	ARRIS	Ⓢ	31	2304	ABYE	Ⓢ	86	2053	ALTO	Ⓢ	78	AUTOLITE STARTER ARMATURES			
5904	KNIFE	*	318	2066	ARTIC	Ⓢ	61	2310	ADDER	Ⓢ	327	2055	ALP	Ⓢ	99	MAB-2006	SET	+	1003
5934	KIND	*	322	2069	AMID	Ⓢ	42	2315	ALIGH	Ⓢ	80	2061	ALGA	Ⓢ	115	2046	SCAR	*	1004
5956	KEEL		298	2073	APEX	Ⓢ	38	2316	ADDLE	Ⓢ	328	2066	ALPEN	Ⓢ	345	2047	SABER	*	1017
5984	KITE	*	320	2082	ACT	Ⓢ	48	3017	ADO	Ⓢ	329	2069	ALSO	Ⓢ	346	2057	SCAPE	*	1005
ATWATER-KENT STARTER ARMATURES				2086	ALE	Ⓢ	52	3032	AFUOL	Ⓢ	330	3017	ABAF	Ⓢ	119	2073	SAUCE	*	1006
6315	SKY	*	1091	2102	AROMA	Ⓢ	49	3087	ANNEX	Ⓢ	153	3050	ALTAR	Ⓢ	347	2086	SABAL	*	1000
6471	SKIN	*	1092	2108	ABIES	Ⓢ	138	3072A	ANKLE	Ⓢ	154	3051	ASTIR	Ⓢ	120	2094	SCRAG	*	1023
6493	SKIMP	*	1093	2110	ALMS	Ⓢ	94	GJA-2006	AGAIN	Ⓢ	331	3052	AMAZE	Ⓢ	348	2098	SACK	*	1001
6533	SKATE	*	1094	2121	APODE	Ⓢ	73	2017	AGILE	Ⓢ	332	3053	ACUTE	Ⓢ	180	MAC-2006	SAY	+	1024
6559	SKEIN	*	1095	2123	ATONE	Ⓢ	118	2018	ALARM	Ⓢ	156	3068	AMBER	Ⓢ	349	2047	SCANT	*	1007
AUTOLITE GENERATOR ARMATURES				2132	ALLOW	Ⓢ	22	2032	ANTIC	Ⓢ	160	3071	ATOM	Ⓢ	186	2049	SILO	*	1008
GAA-2006	ASIDE	+	113	2135	ABORT	Ⓢ	139	2067	ADOBE	Ⓢ	181	GRA-2004	ARIAN	Ⓢ	65	2052	SAKE	+	1009
2077	ANURA		116	2141	ABOX	Ⓢ	140	2071	ANNUL	Ⓢ	183	GRB-2017	ARIL	*	187	2056	SAVE	+	1122
2104	AVERT	*	21	2142	APT	Ⓢ	91	2072A	ANEW	Ⓢ	184	GRC-2021	APOD	Ⓢ	185	MAD-2006	SAVE	*	1010
GAB-2006	APRON	+	130	2143	APPLE	Ⓢ	87	2079	ANON	Ⓢ	165	2046	ARGON	Ⓢ	189	2031	SCOW	*	1011
2090	ATTAR	*	14	2181	AGENT	Ⓢ	59	2087	ANIL	Ⓢ	187	2050	ARGIL	Ⓢ	190	2054	SCOLD	+	1012
2142	ARRET		64	3077	ABRIN	Ⓢ	148	2127	ABIDE	Ⓢ	168	2052	ARK	Ⓢ	191	2057	SAD	*	1002
2165	ARGAL	*	47	3108	ABUSE	Ⓢ	149	2208	AKIN	Ⓢ	95	2053	ASSAY	Ⓢ	192	2062	SHREW	*	1013
2169	ASP	*	34	GAM-2006	AQUA	Ⓢ	100	2238	ALIBI	Ⓢ	169	2071	ARRAY	Ⓢ	193	2067	SALIC	*	1014
2177	ARSON	*	81	2038	ARGUS	Ⓢ	96	2264	ADAPT	Ⓢ	74	2079	AMBLE	Ⓢ	350	2083	SAFE	*	1059
GAE-2025	AVOW	*	33	GAC-3006	ARID		39	2275	AGLOW	Ⓢ	333	2080	ALT	Ⓢ	370	3073	SAG	*	1060
2142	AWAIT	*	43	GAP-2057	ADEPT	Ⓢ	150	2279	AHEAD	Ⓢ	334	3024	ARISE	Ⓢ	194	MAE-2006	SAGE	*	1061
2150	AWAKE	*	57	2059	ALoud	Ⓢ	151	2304	ALAS	Ⓢ	336	3052	AMISS	Ⓢ	351	MAH-2006	SALAD	*	1062
2157	ASPIR	*	58	2060	ANGRY	Ⓢ	155	2317	AIRY	Ⓢ	335	3053	APSE	Ⓢ	195	4005	SARGO	*	1063
2162	AWARE	*	60	2061	ABBA	Ⓢ	188	2318	AJAR	Ⓢ	172	3071	AMOUR	Ⓢ	352	MAJ-2006	SCAN	*	1015
2171	AWARD	*	62	2062	ABASE	Ⓢ	300	2336	ADAGE	Ⓢ	173	3083	AMPLE	Ⓢ	353	2046	SCORE	+	1016
2180	AWAY	*	63	2064	ABBOT	Ⓢ	301	2339	ASSET	Ⓢ	143	GRD-2053	ASTAY		367	2048	SATYR	*	1064
3142	AGATE	*	66	2069	ALIEN	Ⓢ	171	2340	AGE	Ⓢ	174	GRE-2051	AMUCK	*	354	2049	SAX	+	1065
3171	AWE	*	70	2071	ALLOT	Ⓢ	125	2345	ARBOR	Ⓢ	175	GS -2006	AFE	*	196	MAK-2006	SCAMP	*	1066
3180	AWING	*	76	2080	ABEAM	Ⓢ	302	2361	ANNOY	Ⓢ	176	2016	ADORN	*	197	MAL-2006	SALVOR		1120
GAF-2074	AWL	*	90	2082	AMUSE	Ⓢ	157	2371	ANGER	Ⓢ	177	2046	ANGLE	*	355	ME -2033	SHONE	*	1018
2081	AWRY	*	93	2084	ABEAR	Ⓢ	303	2372	ALBUM	Ⓢ	337	3006	ARROW	*	198	MF -2077	SENNA	*	1019
2085	AXIOM	*	102	2087	AMOS	Ⓢ	365	2373	AMARE	Ⓢ	369	GT -2006	APART	Ⓢ	71	3077	SATIN	*	1020
2087	AXIS	*	106	3068	AIL	Ⓢ	158	3072A	ABBEY	Ⓢ	144	2066	ARGUE	Ⓢ	199	MG -2006	SENSE	*	1021
GAG-2006	ALUM	Ⓢ	15	3081	ABOVE	Ⓢ	162	3238	ARC	Ⓢ	79	GTB-2074	APIS	Ⓢ	82	2019	SHOUT	*	1022
2033	ARIA	Ⓢ	17	3089	ABLE	Ⓢ	304	3240	ARRAS	Ⓢ	178	2101	ALL	Ⓢ	24	2030	SCALL		1123
2057	ALDER	Ⓢ	18	GAR-2006	ABOUT	Ⓢ	307	3269	AGUE	Ⓢ	179	2112	ABOON	Ⓢ	25	2042	SAT	*	1025
2069	ARABY	Ⓢ	36	2041	AVID	Ⓢ	308	3317	ALLEY	Ⓢ	338	2117	AREAR	Ⓢ	357	MH -2006	SCARY		1124
2075	AXLE	Ⓢ	123	2042	ABUT	Ⓢ	309	3336	ALLOY	Ⓢ	339	2126	ASHES	Ⓢ	358	2018	SHIP	*	1026
2079	ARGEN	Ⓢ	35	2048	ABHOR	Ⓢ	305	3338	ALLY	Ⓢ	340	2128	ANVIL	Ⓢ	97	2033	SABEN	*	1027
2081	ASHEN	Ⓢ	145	2073	APEX	Ⓢ	38	3339	AIM	Ⓢ	181	GU -2016	ADOPT	*	359	2039	SHOE	*	1028
2083	ARCH	Ⓢ	67	2137	ARMOR	Ⓢ	68	GK -2006A	AHOY	*	341	3006	ASPEN	*	360	ML -2039	SHAVE	+	1029
2085	AORTA	Ⓢ	51	2147	ART	Ⓢ	122	2048	AURA		372	GW -2006	ASTAR		368	2057	SETA	*	1030
2094	AYE	Ⓢ	126	2178	ABLY	Ⓢ	306	2213	AZTEC	*	342	2025	ATTIC	*	361	2081	SCRIM		1125
2099	ARM	Ⓢ	112	2214	ABYSM	Ⓢ	313	3048	AMONG	*	159	2046	AUDIT	*	362	2085	SINUS	*	1031
2104	AZOIC	Ⓢ	127	GAS-2076	ACRE	*	314	3061A	AGREE	*	166	3025	AUGER	*	363	2088	SEDGY		1126
2106	ARAB	Ⓢ	141	3006	ADD	*	316	3066A	AFFIX	*	182	3054	AUGHT	*	364	2089	SCOT	*	1032
2118	ADIEU	Ⓢ	40	3076	ADDAX	*	317	3217	ALOFT	*	343	GXB-2006	ARGOT	*	75	MN -2003	SALLY	*	1033
2126	ABYSS	Ⓢ	69	GAU-2006	ASERT		366	GKA-2049	ATLAS	*	142	2025	AREFY	*	26	2006	SHARE	+	1034
3046	ASPER	Ⓢ	146	GG- 2120	ADIOS	*	16	2069	ALONG	*	344	2035	AMEN	*	27	2022	SHED	*	1035
3051	AZURE	Ⓢ	129	2227	AFOOT	*	324	GP -2020	ADMIT	Ⓢ	183	2036	ACTOR	*	92	2027	SHY	*	1036
3076	ACME	Ⓢ	41	GJ -2018	ASTER	Ⓢ	5	2116	ALLAY	Ⓢ	54	GY -2006	ANGEL	Ⓢ	88	2038	SAXON	+	1037
3096	ABACK	Ⓢ	132	2032	ABET	Ⓢ	45	2117	AID	Ⓢ	184	2017	ASK	Ⓢ	77	2042	SHRED	+	1038
3114	ABELE	Ⓢ	133	2063A	ADZ	Ⓢ	325	2151	ALIVE	Ⓢ	50	GYA-2030	ASKER	Ⓢ	83	2080	SHOAL	*	1039
GAH-2039	ABERR	*	134	2072	ADULT	Ⓢ	56	2161	ACORN	Ⓢ	53	2037	AISLE	Ⓢ	28	2081	SIN	*	1040
GAJ-2006A	AVERY	Ⓢ	32	2110	ATOLL	Ⓢ	46	2350	ABASH	Ⓢ	108	2039	ACID	Ⓢ	89	2082	SELAH	*	1041
2046	ANUST	Ⓢ	147	2118	ALONE	Ⓢ	121	2360	AMASS	Ⓢ	124	2050	ASHY	Ⓢ	29	2083	SCOFF	*	1067
2050	ABODE	Ⓢ	136	2151	ABATE	Ⓢ	20	2372	ALIKE	Ⓢ	107	2053	AULD	Ⓢ	356	MO -2006	SATE	+	1042
2055	ARENA	Ⓢ	137	2161	ACORN	Ⓢ	53	GR -2012	AFTER	Ⓢ	84	2055	ALERT	Ⓢ	30				
GAK-2069	APHIS	*	19	2188	ACHE	Ⓢ	55	2046	AGOG	Ⓢ	23								
				2215	ACE	Ⓢ	152	2050	AGLET	Ⓢ	110								

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For prices, interchangeability data, etc., see further indexes.



○ Letters in circles indicate UNIVERSAL TYPES -- FAST Moving
 * Indicates slow Moving armatures -- ORDER AS REQUIRED
 + Indicates Fast moving armature - not universal - furnished in conventional type only
 Ⓢ Indicates General Application
 All other armatures FAIR Moving

Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.	Factory Armature Number	OUR CODE	UNI. VERSAL TYPE	Our No.
AUTOLITE STARTER ARMATURES				DE JON GENERATOR ARMATURES				DELCO GENERATOR ARMATURES				DELCO GENERATOR ARMATURES				DELCO STARTER ARMATURES			
MO -2016	SEEDY		1127	DA -2092	HANDY	*	404	14931	DENIM	*	255	18002	DEER	*	283	38348	SIEGE	*	1200
2030	SALVE	+	1043	2112	HATCH	*	405	14938	DAY		249	18092	DENY	*	284	38368	SHIN	*	1201
MP -2006	SKULL	*	1044	2116	HARDY	*	406	14959	DAISY	*	224	18102	DELVE		238	DYNETO			
2012	SIDE	*	1045	2119	HALE	*	400	15017	DISH		219	18132	DIM	*	254	GENERATOR ARMATURES			
2024	SELF		1128	2131	HAREM	*	408	15423	DEEM		201	18134	DERMA	*	285	22162	MILE	+	315
MR -2006	SHEAF	*	1046	DAA-2058	HAT	*	409	15440	DHOW	*	228	18153	DEN		214	22259	MERIT	*	311
2039	SCORN	*	1068	DAB-2116	HART	*	410	15583	DEY		262	18174	DIGIT	*	286	22756	METER	+	310
MU -2006	SAVOR	*	1047	2133	HAVEN	*	411	15590	DEPTH	*	273	18185	DERRY	*	293	23214	MERRY		373
2018	SCOVE	*	1069	3116	HAWK	*	412	15598	DECOY		258	19006	DAZE	*	287	23252	MAT		312
2120	SCOWL	*	1070	3133	HAZE	*	413	15611	DEED		217	19007	DESK	*	294	DYNETO			
2132	SCOOP	*	1048	DAC-2058	HAZEL	*	414	15683	DAUB	*	232	19014	DETER		295	STARTER ARMATURES			
2133	SAURY		1121	D8 -2016	HEEL	*	415	15717	DEAR		230	26734	DAB	*	204	13103	SERF	*	1114
2168	SECT	*	1049	2037	HASP	*	416	15722	DART	*	250	27288	DAFFY	*	205	13292	SKIT	*	1115
2198	SHACK		1129	DC -2037	HABIT	*	418	15883	DARE		200	27468	DAFT	*	212	13308	SEPOY	*	1116
MUA-2018	SALAM	*	1050	2038	HEATH	*	419	15884	DAFF		235	27803	DAIRY	*	215	13409	SEPIA	*	1117
2120	SEAM	*	1051	DD -2037	HANG	*	420	15892	DIRK		241	27842	DALE	*	216	13592	SEROW	*	1118
MUB-2133	SCREE	*	1071	DE -2037	HEDGE	*	421	15955	DAFF		235	27875	DANE	*	218	13593	SERVE	*	1119
MZ -2006	SAUCY	+	1052	2077	HAIR	*	422	16060	DIN	*	274	27985	DEW	*	296	DELCO REMY			
2047	SERUM	+	1053	DG -2006	HACK	*	423	16071	DEAN	*	203	28023	DATE	*	225	GENERATOR ARMATURES			
2049	SEAMY	+	1054	2054	HAUNT	*	424	16091	DARK		213	28037	DATUM	*	229	806161	RACY	*	510
2055	SCOUT	+	1055	2057	HAG	*	425	16194	DICE		202	37500	DALLY		288	809781	RAZE	*	521
2066	SEDAN	+	1056	2058	HAIL	*	426	16212	DEEP		264	37735	DEBAR	*	289	809853	ROUTE		555
2068	SEAT	+	1057	2062	HARK	*	427	16216	DINE	*	237	37826	DASH		259	809963	ROAD	Ⓢ	542
2069	SHADY		1130	2066	HELIX	*	428	16222	DEMON		251	DELCO				810109	RAVE	Ⓢ	643
2076	SCOUR	*	1058	3054	HELM	*	417	16265	DOVE	*	276	STARTER ARMATURES				810153	RANGE	Ⓢ	532
2082	SCROD	*	1072	DK -2006	HALT	*	407	16266	DECK	*	227	14558	SHEEP	*	1206	810253	RICE	*	551
BOSCH				DE JON				16268	DEAL	*	233	14565	SHINE	*	1207	810383	RAFT	Ⓢ	533
GENERATOR ARMATURES				STARTER ARMATURES				16290	DEIGN		267	14627	SAHIB	*	1208	810467	RARE	Ⓢ	545
21226	BANAL	*	101	SA -2036	SICE	*	1075	16366	DAMP		243	14928	SIGN	*	1210	810648	RUBY	Ⓢ	548
21345	BASIS	*	117	2065	SCUFF	*	1073	16370	DIRE	*	265	14942	SHIRR	*	1211	810875	RUGA		541
21697	BAIL		104	2074	SIDLE	*	1076	16379	DEL		269	15308	SIGHT	*	1213	810729	RAP	*	540
21726	BASSO		105	2080	SCULP	*	1074	16385	DERM		256	15376	SHERD	*	1214	810844	READY	*	644
21784	BARD	*	109	2083	SEWER	*	1077	16394	DECRY		260	15603	SEW	*	1215	810948	RATCH	Ⓢ	534
22023	BASIN		111	2084	SIMIA	*	1078	16437	DINT	*	278	15848	SEIZE	*	1216	811053	RED		535
22190	BAG		111A	SB -2012	SHARK	*	1079	16499	DEFY	*	231	15893	SEAL	*	1217	811092	REED	Ⓢ	552
22246	BAIL		104	2039	SHALY		1131	16500	DILL		252	15954	SEVER	*	1219	811462	RUDD	*	5438
22292	BADGE		105A	2050	SLIVA	*	1080	16511	DEBIT		279	15963	SEA	*	1220	811583	RAID		537
22396	ASIDE	+	113	2051	SCRIP	*	1081	16552	DIMLY	*	280	16084	SANE	*	1221	811609	ROHAN	*	536
22413	BASE	*	135	2052	SHAME		1132	16575	DANK		222	16085	SERGE	*	1222	812075	RASH	*	538
22523	BANE		116	2057	SHELF		1133	16643	DEFER		236	16190	SANG	+	1223	812122	RAGE	*	563
22586	BAR	*	128	2058	SCRUB	*	1082	16654	DELTA		270	16218	SEINE	*	1224	812142	RUCK	Ⓢ	560
22754	BABE		131	2076	SET	*	1083	16667	DANDY	*	207	16267	SCUT	*	1225	812209	ROUGE		571
22943	BADGE		105A	2079	SEAR	*	1087	16746	DING		208	16357	SINE	*	1226	812280	ROUGH		553
22947	ASIDE	+	113	2096	SEEK	*	1088	16782	DEAF		246	16378	SETTO	*	1227	812317	RADIX		554
22961	BANE		116	SC -2036	SEEP	*	1089	16785	DEMI		271	16583	SEER	+	1228	812681	RITE	*	646
22964	BABE		131	2067	SLACK	*	1084	16794	DEMUR		272	16643	SCUM	+	1229	812752	ROUND	*	647
23124	APRON	+	130	2086	SELL	*	1090	16842	DAWN		234	16654	SAW	*	1230	812814	ROOMY	*	543A
BOSCH				SD -2006	SCREW	*	1085	16842	DEMY		275	16806	SCURF	*	1231	812834	ROUSE		543
STARTER ARMATURES				2031	SHOD	*	1086	16843	DELL		247	16829	SIFT	+	1232	812877	ROPE		648
21249	SCALP	*	1168	DELCO				16843	DAD	*	242	16843	SANDY	*	1233	813002	ROMAN	Ⓢ	585
21271	SEAM	*	1051	GENERATOR ARMATURES				16843	DANCE	*	298	16989	SHEEP	*	1212	813070	RIPEN	+	562
21290	SCALE	*	1166	11989	DAME		220	16843	DENSE		277	18062	SHOVE	*	1234	813118	ROOT	Ⓢ	565
21680	SHIRE	*	1187	12220	DAUBY	*	239	16842	DEPOT	*	290	18081	SETON	*	1235	813206	RECUR	*	649
21705	SALAM	*	1050	12293	DEBUT		257	16842	DERAY	*	291	18140	SHEEN	*	1236	813257	RATE	*	539
22384	SAIL	*	1169	12880	DAVER	*	245	16842	DATA	*	209	19014	SHEIK	*	1218	813118	ROOT	Ⓢ	565
22597	SHOCK	*	1170	13358	DARBY	*	221	16842	DERBY	*	292	19038	SING	*	1237	813206	RECUR	*	649
22609	SCOLD	*	1171	13370	DIP	*	206	16842	DINER	*	223	37591	SHAM	*	1202	813257	RATE	*	539
22701	SAVOR	*	1047	13837	DIAL		210	16842	DEMIT	*	281	37846	SAVOY	*	1238	813277	RAPID		564
22804	SHUN	*	1172	14399	DAILY		211	16842	DACE		282	37875	SHARD	*	1203	813472	RANT	*	650
DE JON				14572	DENT	*	297	16842	DEEM		201	37892	SHAW	*	1204	814576	ROCK		651
GENERATOR ARMATURES				14635	DIRGE	*	226	16842	DEEM		201	37897	SAND	+	1239	814958	RANGY	*	652
DA -2037	HALE	*	400	14788	DINGY	*	244	16842	DEEM		201	38263	SHAY	*	1205	814988	RIP		558
2058	HALL	*	401	14887	DEUCE		261	16842	DEEM		201	38282	SCULL	*	1240	814998	RIVET	Ⓢ	653
2059	HAME	*	402	14929	DAVIT	*	248	16842	DEEM		201	38310	SCALD	*	1241	815016	RIVER	Ⓢ	501
2072	HASTY	*	403					16842	DEEM		201	38335	SIEVE	*	1242	815047	ROE	Ⓢ	574
								16842	DEEM		201	38335	SCUD	*	1243	815073	ROTE	*	654

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JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC TRUST CUST'N EXEC'R ADM'G

Name _____

Interest payable

What Amt. if any does Corp. assume

7.

Back

DIVIDEND OR INTEREST PAYMENTS

DAILY BUMPS REPORT

American Printing Co.

193

BUMPS WASHED

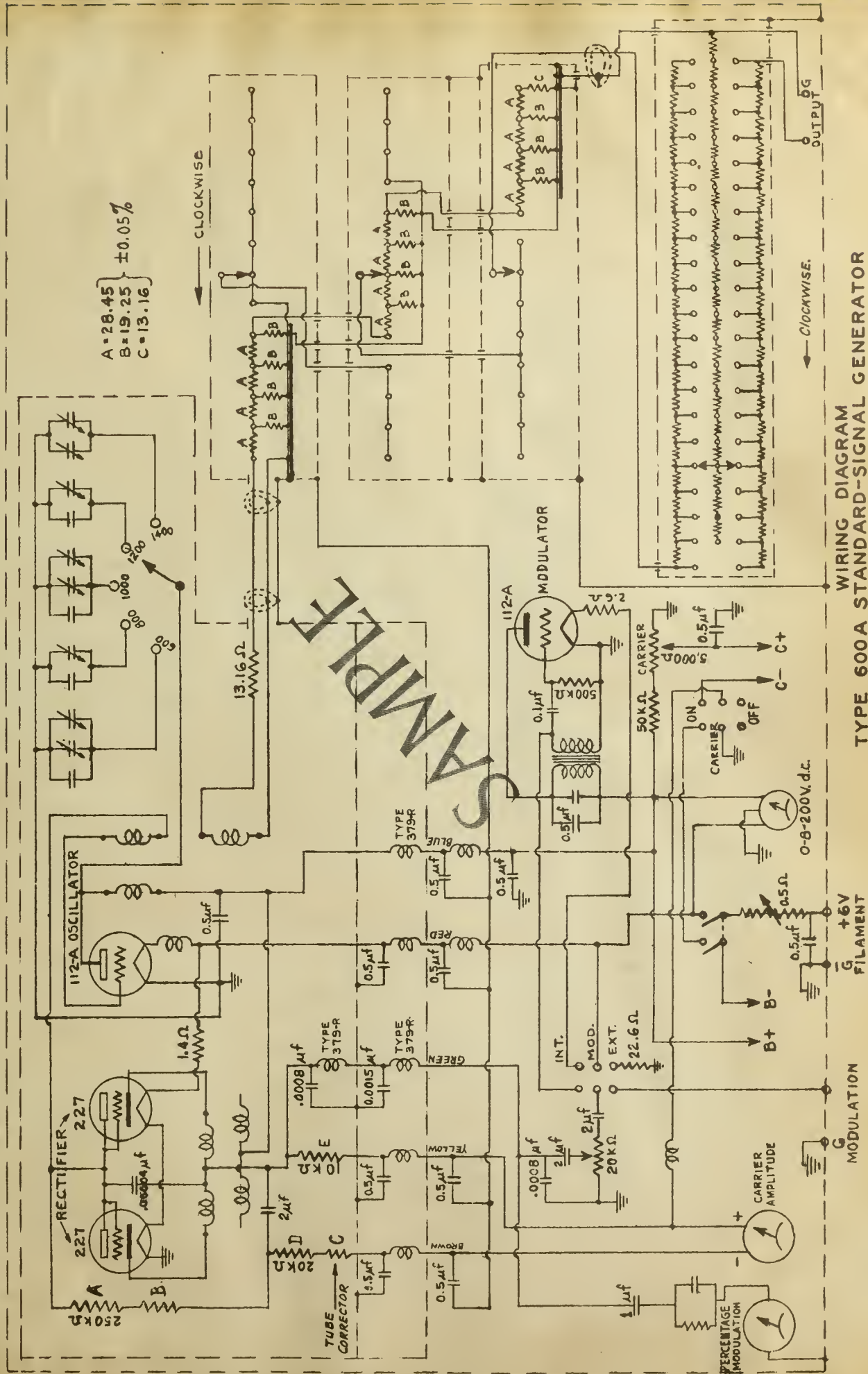
Mach No.	Hours	Yards	Yds. Per Hour	Remarks
Diasto Machine				
No.1 Washer				
No.2 "				
No.3 "				
No.4 "				
No.5 "				

Washed Bumps
 Sent to Diasto _____
 Total Yards
 From Print Room _____
 Weekly Yardage
 From Print Room _____

Yds. Printed
 For Day _____
 Yards Covers
 For Day _____
 Total For Day _____
 Total For Week _____

No. of Boxes
 From Print Room _____
 No. of Rolls
 Sent to Diasto _____
 Total _____
 Average Yds.
 Per Roll & Box _____

Overseer



WIRING DIAGRAM
TYPE 600A STANDARD-SIGNAL GENERATOR

		T.S.	El%	B.H.
Dow Metal (E)	Al, 6%. Mn, 0.25%	Sand 26,000	7	52
"	(T) Al, 2%. Cd, 2%. Cu, 4%. Mn, 0.15%	Wrought 42,000	11	58
		Sand 21,000	3	45
		Die 21,000	3	70
Electron V. I.	Al, 10%. Mn, 0.2-0.5%	Wrought & 50,000	8	70
		Ht.Treat. 57,000	4	87
"	AZF. Al, 4%. Mn, 0.2-0.5%. Zn. 3%	Sand 26,000	5	45
		Chill 80,000	8	52
"	AZM. Al, 6%. Mn, 0.2-0.5%. Zn. 1%.	Wrought. Soft 43,000	14	55
		Hard 53,000	1	65
"	AZD. Al, 5%. Cd, 3%. Mn, 0.2- 0.5% Zn, 3%	Extruded (Soft) 45,000	11	60
		(Hard) 56,000	1	70
"	23. Zn, 3%.	Extruded (Soft) 33,000	16	42
		(Hard) 43,000	2	60

CONSTITUTION OF BINARY MAGNESIUM ALLOYS.

Mg-Cu. Have been used for pistons. The 13% Cu is said to be stronger at high temperatures than the 4% Al. In the cold, the 2% Cu is the strongest. The worked alloys are much improved, but all of the series are rapidly corroded under normal atmospheric conditions.

MgZn. Show a Mx. T.S. at 8% Zn of 25,000 lbs.

Mg-Al. Hanson & Gayler found two compounds, Al_3Mg_2 at $450^{\circ}C$. and Al_2Mg_3 at $460^{\circ}C$. Three eutectics, 33% Mg at $448^{\circ}C$, 42% Mg at $448^{\circ}C$ and 69% Mg at $433^{\circ}C$. Solubility of Al is 11% at $433^{\circ}C$ and about 9% at normal. Schmidt finds the solubility 11% at $436^{\circ}C$ and 7.5% at normal.

Mg-Zn. Hume-Rothery & Rounsefell found $MgZn_2$ at $590^{\circ}C$. $MgZn_5$ by reaction at $380.5^{\circ}C$. and MgZn by reaction at $354^{\circ}C$. Two eutectics 3% Mg at $364^{\circ}C$ and 49% at $340^{\circ}C$. Solubility of Zn is 6% at $340^{\circ}C$ and less than 1% at normal. Chadwick gives 13% Zn at $342^{\circ}C$ while Schmidt gives 6% at $345^{\circ}C$ and about 1.79% Zn at normal.

Mg-Cd. Hume-Rothery & Rowell find Cd_2Mg by reaction at $379^{\circ}C$. The zinc-rich solid solution is about 7% Mg. The Mg solid solution begins at 13% Mg. It shows a transformation in the solid with maximum at $250^{\circ}C$ and 18% Mg (about $CdMg$).

Mg-Cu. Sahmen found $CuMg_2$ at $570^{\circ}C$ and Cu_2Mg at $797^{\circ}C$. Eutectics at 32% Cu and $485^{\circ}C$; 68% Cu at $555^{\circ}C$ and 91% Cu at $730^{\circ}C$. Hansen found Mg dissolved 0.5% Cu at $485^{\circ}C$ and 0.1% at normal.

Mg-Pb. Grube shows $PbMg_2$ at $551^{\circ}C$. Two eutectics, 3% Mg at $247^{\circ}C$ and 33% Mg at $459^{\circ}C$. Schmidt found 26% Pb in Mg at $459^{\circ}C$. and 18% at normal.

Mg-Si. The eutectic of Mg and Mg_2Si contains 1.5% Si, $646^{\circ}C$. Mg_2Si at $1100^{\circ}C$. Eutectic 58% Si at $950^{\circ}C$. (Vogel: Schmidt.)

Mg-Ni. Voss shows Ni_2Mg by reaction (?) at $1145^{\circ}C$ a two-liquid area, and and $NiMg_2$ by reaction at $768^{\circ}C$. Eutectic of Ni and Ni_2Mg at $1082^{\circ}C$. and 12% Mg. Eutectic of $NiMg_2$ and Mg at $512^{\circ}C$ and 66% Mg. Solubility of Ni in Mg at $512^{\circ}C$ probably about 10%.

Mg-Sn. Grube found $SnMg$ at $783^{\circ}C$. Eutectics, about 3% Mg at $209.5^{\circ}C$ and 62% Mg at $565^{\circ}C$.

Mg-Ag. Tafel gives $MgAg$ at max. $825^{\circ}C$ and Mg_2Ag by reaction at $500^{\circ}C$. Eutectics at 11% Mg and $760^{\circ}C$ and at 52% Mg at $475^{\circ}C$.

Mg-Ca. Mg_4Ca_3 at $720^{\circ}C$. Eutectics, 80% Mg and $514^{\circ}C$; 22% Mg and $446^{\circ}C$.

Na and K. Both show type VIIA diagram.

Mg-Mn. Schmidt finds 3% Mn raises the liquidus but the solidus remains constant at the f.pt. of Mg.

Mg-Al-Cd. Valentin. Rev. deMet. 23, 1926. 209. 295. Gives the binaries and ternary diagram. Also the ternary $MgCl_2$ -KCl-BaCl₂.

References:- Saldan & Zamotorin. Sol. of Al in Mg. in The Solid. J.I.M. 48. I. 1932. 221.
Hanson & Gayler. Constitution Al-Mg. Jl. Inst. Mets. 1920. II. 201.
Halstead & Smith (32-48% Mg). Am. Elec. Chem. Soc. 49. 1926. 291.
Hume-Rothery & Rowell. MgCd. Jl. Inst. Mets. 38. 1927. 137.
Hume-Rothery & Rounsefell. Mg-Zn. Jl. Inst. Met. 41. 1929. 119.
Chadwick. MgZn. Idem. 39. 1928. I. 285.
Hansen. Mg-rich. Mg-Cu Alloys. Idem. 37. 1927. 93.
Vogel. Mg-Si. ZaC. 61. (1909). 50. Eutectic 4% Si and 645°C.
Baar. Mg-Ca. Idem. 70. p.362.
Schmidt. Zeits. Metallkunde. 19. 1927. 452. Magnesium-rich Alloys.
Meissner. Metallwirtschaft. 7. 1928. 128. 252. Mg with Al, Zn, Pb, Cu, Si, Mn. Constitution and mechanical properties.
Gann & Winston. Mg and its alloys. Ind. & Chem. Eng. 19. 1927. 1193.
Bengough & Whitby. MgAlloy Protection by Se & other coating processes. J.I.M. 48. 147.

BERYLLIUM AND ITS ALLOYS.

Ref: Abstract. 1927. Campbell.
Oesterheld. Zeits. anorg. Ch. 97(1916)p.1. Alloys with Al, Cu, Ag, Fe.
Bassett. Proc. Inst. Met. Div. A.I.M.E. 1927. 218. Copper Beryllium.

Be- Density 1.84. M.P. 1280°C. B.H. 90. Resists corrosion.

Copper-Beryllium. Compounds. Cu_2Be and $Cu Be_2$. M.P. 880 & 1220°C.
Copper holds 1.5% Be in solid solution. Alloy of 1.25% Be-cold-rolled #6 gauge. T.S. 145,000 lbs. per sq. inch.

Aluminum-Beryllium. Type V. diagram.
Al holds 0.4% Be in solid solution. Eutectic 1.4% Be at 644°C.
T.S. increases with the Be. 15Kg. at 20% Be.
Al containing Mg and Be age harden. The Al-Si-Be do not.

Iron-Beryllium. Compound $Fe-Be_x$. Eutectic at 1155°C. and 9.2% Be
Gamma holds. 6.2% Be in solution at 1155°C.
Alpha holds about 5% Be in solution at normal.

Silver-Beryllium. Type V. Eutectic 1.5% Be at 878°C.
Beryllium said to make silver non-tarnishable.

THERMAL CONDUCTIVITY.

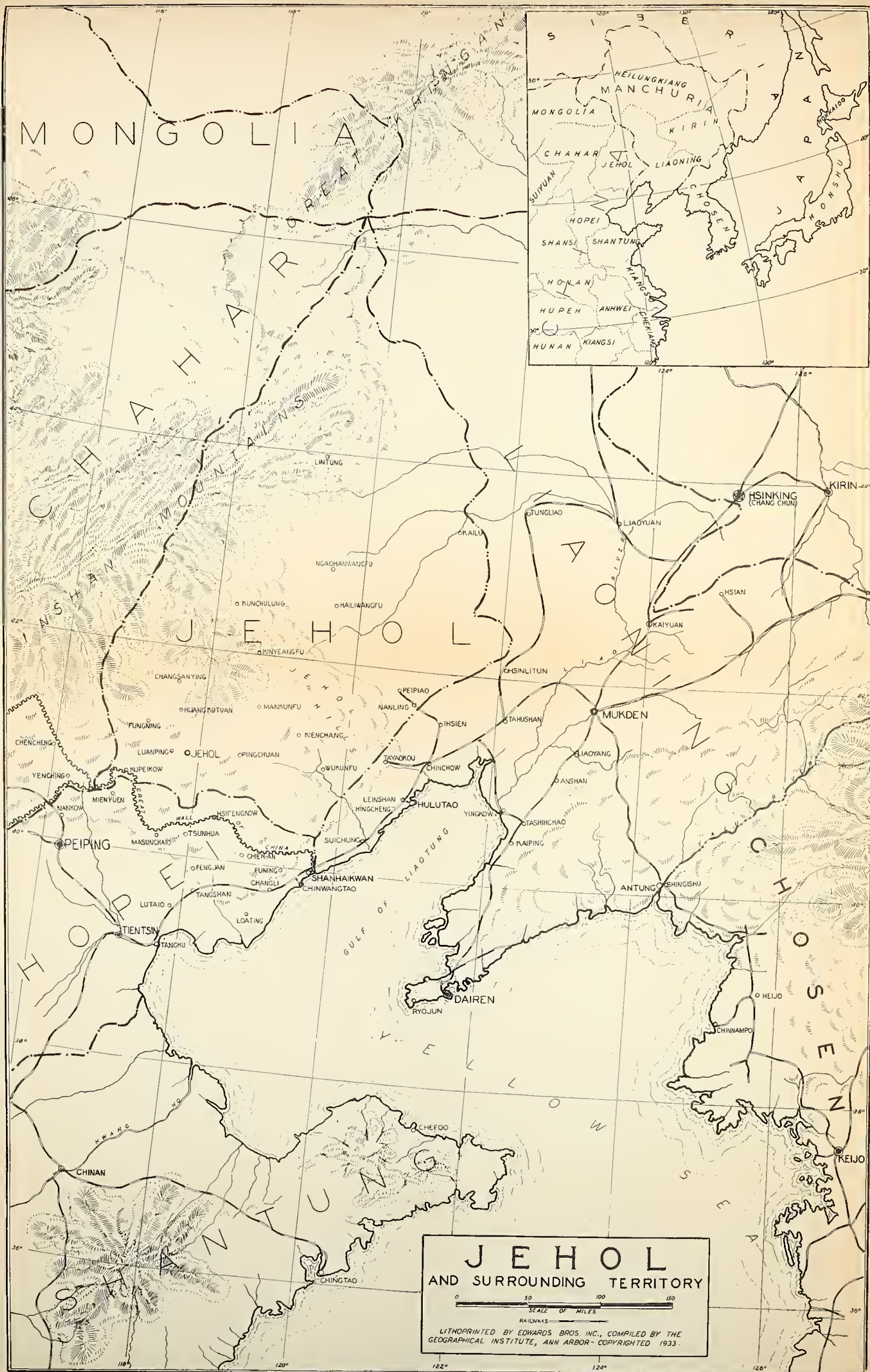
Smith. Copper Alloys I. CuZn. T.A.I.M.E. 89. 84.
" II. CuZn. III CuP. T.A.I.M.E. 93. 176.
Hanson & Rodgers. Some Non Ferrous Alloys. J.I.M. 48.1.1932.37.

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"THE PROVINCE OF JEHOL"

Clouds of war again darken the Far East as Japanese troops are attempting to confirm the addition of the Province of Jehol to the newly-formed State of Manchukuo. Jehol itself, in reality the easternmost part of political Inner Mongolia, is not included in geographic Mongolia. It has an area of about 60,550 square miles, slightly greater than that of Michigan, and a population of between four and four and a half million. No accurate census has ever been taken, but using the 1930 Japanese estimate of 4,670,000, the population density is 77 per square mile.

Jehol is more closely linked with Manchuria than with Inner Mongolia by virtue of the extension of the Manchurian Plain into the disputed Province, and has for many years been closely associated with Manchuria economically. The River Lao, which drains the greater part of Jehol, flows through Manchuria to join the Liao and thence to the Gulf of Liaotung and forms a closer unity between the two regions.

The disputed area, simultaneously with Chahar and Suizuan, was created a Province in 1929 by the National Government of China. It lies to the north of the Great Wall and is for the most part mountainous. However, its few valleys and arable plains have been occupied by Chinese farmers for decades. Agriculture is the dominant occupation and about 20 per cent of the land is cultivated. But one railroad extension enters the Province, a branch of the Peiping-Mukden line which runs from Chinchow to Peipiao.

Three distinct physiographic regions are included within the political boundaries of Jehol. Mountains, made up largely of hard, ancient rocks which have been eroded into bare highlands are the dominant landscape form in the south. Here and there softer beds make islands of more gentle relief. This is the same formation as that found in the Shantung and Liaotung peninsulas, although the areas are quite separate. Because of the proximity of this highland area to the sea and because of its

position near two of the most important agricultural plains in China--namely the North China Plain and the Manchurian Plain, it has achieved considerable importance. The highlands form an effective barrier to north-south traffic, and Shanhaikwan, the the focus of the present "incident" controls the most important route past this highland formation, and is for this reason of the utmost strategic importance should any concentrated attempt be made upon Jehol itself. With the passes from south to north controlled by the Japanese, it would be extremely difficult for the Chinese to rush defending troops into the Province.

The northeastern section of Jehol is an extension of the Manchurian Plain. Soils and climate are very similar to those found in Manchuria proper. The most important crops, kaoliang, millet, wheat and soy beans, provide sustenance and profit for the pioneering farmers who have settled the area. While Jehol, as a part of Inner Mongolia, has not been the scene of as extensive colonization as has Manchuria, large numbers of Chinese have immigrated there in recent years.

The third natural region which extends into Jehol is a southward extension of the inverted "L"-shaped Khingan Mountains. In northern Manchuria this range is called the Little Khingan and is the eroded remnant of a tectonic formation. However, the range which extends into Jehol is a southward continuation of the Great Khingans, known as the Inshan Range, and is the eroded scarp which forms the eastern border of the great Mongolian Plateau.

Coal and iron are mined within the southern highlands area. The most important coal mine is located at Peipiao where in 1928 367,000 tons were taken from the ground. This mine is under joint Sino-Japanese ownership. Reserves of coal in Jehol Province have been estimated at approximately 80 million tons of anthracite coal and 850 million tons of bituminous coal. In addition silver mines which have an estimated possible production of 75,000 ounces yearly are located 45 miles north-east of the city of Jehol.

Previous to its inclusion in the State of Manchukuo in March, 1932, Jehol had kept

aloof from the numerous political changes which had taken place in Manchuria. Chinese farmers, numbering over three million, had been gradually pushing northward and displacing the Mongols, whose numbers are estimated at about one million. These Mongols still live under the Banner, or tribal, system, and have kept some connection with the Mongol Banners of western Fengtien and have set up "Leagues" with them. These Leagues have long favored independence from Chinese rule, as the proud Mongols do not assimilate well with the Chinese. Only too well do they remember the exploits of Genghis Khan and his conquest of China, and they resent the gradual and irresistible infiltration of Chinese farmers.

Yet when the Province was included in Manchukuo the Provincial Government, under the direction of General Tang Ju-lin, took no decisive step, but appeared to lean toward an alliance with the National Government of China. But as Jehol is in reality the gateway to North China and Inner Mongolia, the Japanese consider it indispensable to the protection of their interests in Manchuria. It is surprising to some that the offensive to occupy Jehol should be started in mid-winter when temperatures often drop far below zero. Yet winter is the best time to conduct troop maneuvers in this region because at this time the ground is frozen hard and allows the transportation of both troops and supplies over the poor roads. There is a summer maximum of precipitation in Jehol, and during the warm months many roads would be made impassable by the rains.

In taking Shanhaikwan the Japanese have for the first time penetrated "inside the Wall," or south of the Great Wall, and into territory which cannot be said to belong to Manchuria. In doing this the incident passes from the jurisdiction of the Japanese War Office to the Foreign Office. The Foreign Office may find some justification for the advance into Chinese territory in an article of the Protocol of 1901 which ended the Boxer Uprising. This article prohibited Chinese troops from advancing within two miles of the railroad between Peking and the sea, and was designed to insure the safe withdrawal of foreign residents of Peking and Tientsin

in the event of trouble. Authorities feel that the Japanese may use this as an excuse for invading Shanhaikwan, although the article was modified in 1912 to allow the transportation of Chinese troops over the railroad in question.

From an international standpoint the taking of Shanhaikwan by the Japanese climaxes the results of 16 months penetration into Manchuria. Reproussions of the Sino-Japanese difficulty have been felt throughout the world and have created serious problems. The nations of the world have not recognized the Japanese-protected Manchukuo, the capital of which is situated at Hsinking (Changchun, the northernmost terminus of the South Manchurian Railway).

China has repeatedly appealed to the League of Nations for protection and has as yet received but little help from the Geneva body. The League is presented with a serious situation in which it must prove its efficiency in preventing war. Both China and Japan are members, but as yet no formal declaration of war has been made nor have diplomatic relations between the two nations been severed. All Europe is closely watching the action of the League. The small nations depend upon that organization for their prestige and safety, whereas the larger ones look to it to preserve the status quo in the Far East as a protection for foreign investments in China.

In the meantime, Japan, faced with a grave situation in which the yen is at its lowest mark in history and nearly 36 per cent of the unbalanced budget is set aside for military and naval expenditures, threatens to withdraw from the League because of interference in a "purely domestic difficulty."

Thus the eyes of the world are focused on the little-known and economically unimportant Province of Jehol. The Japanese consider possession of this area essential to the safety of their holdings in Manchuria and there is little likelihood that they will relinquish their hold on the northern gateway to China Proper.

1st Trumpet in B \flat

The Cross Roads

Andantino (muted) *Fl. Solo* *muted Voice Melody*

oboe

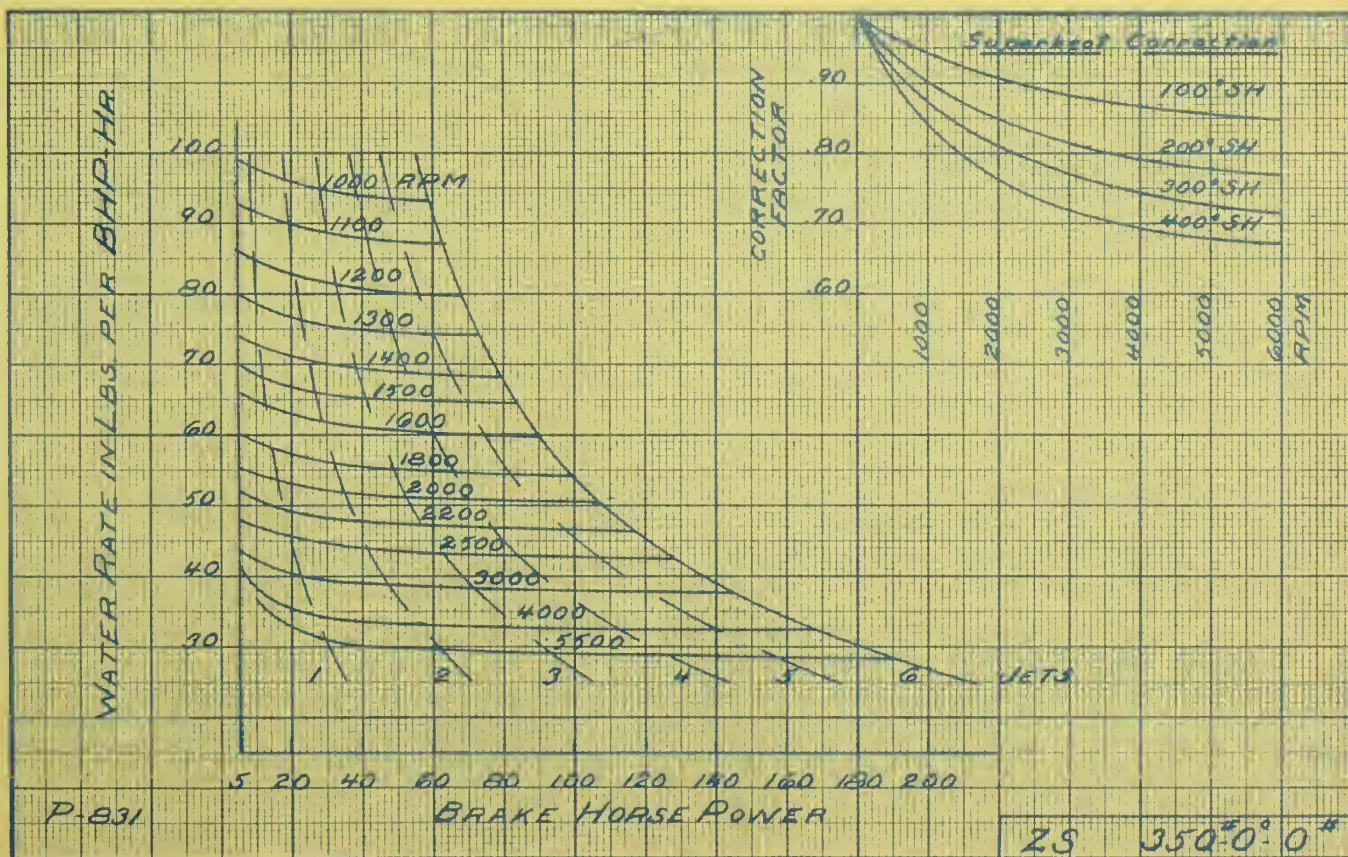
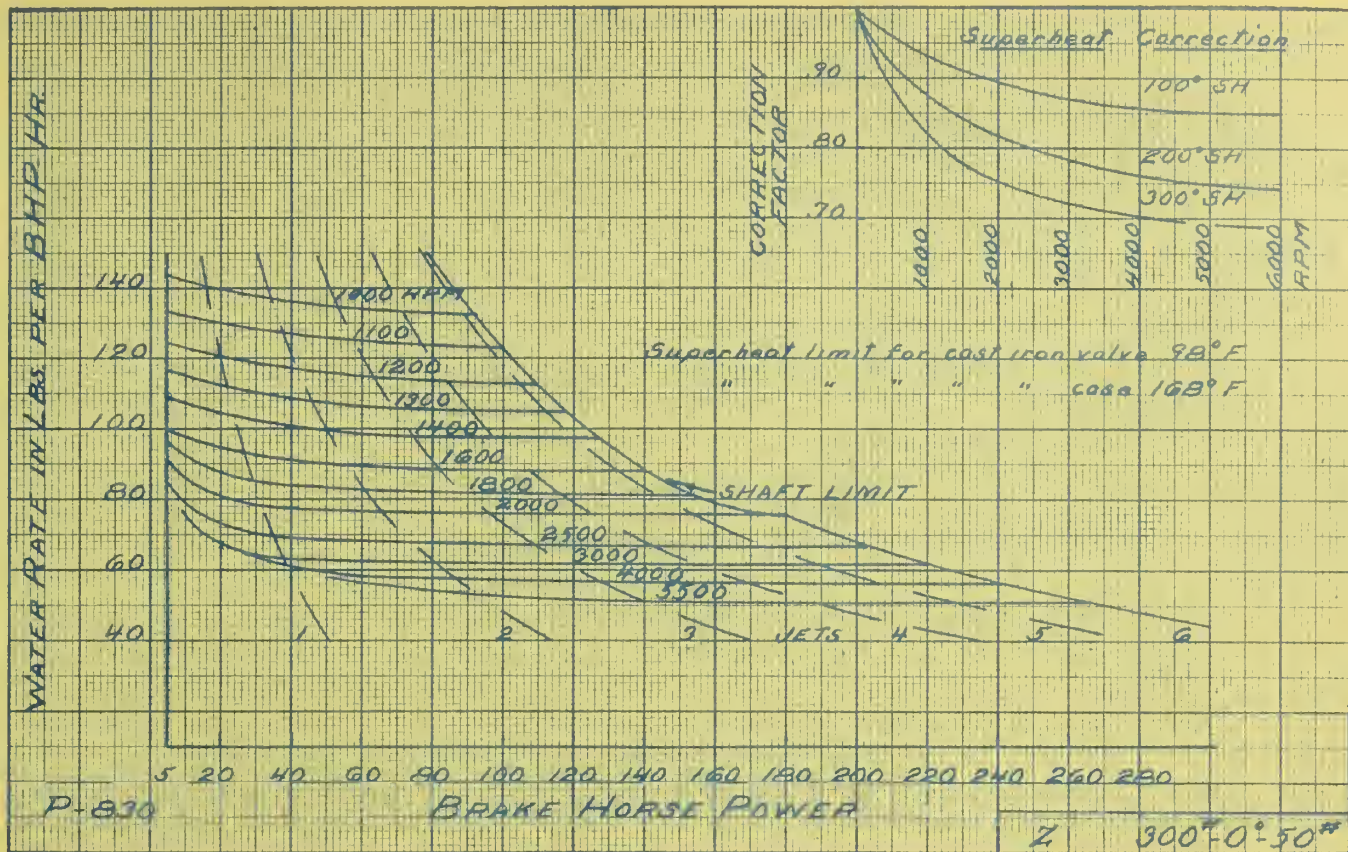
Piu Mosso *oboe* *Hrn. Solo*

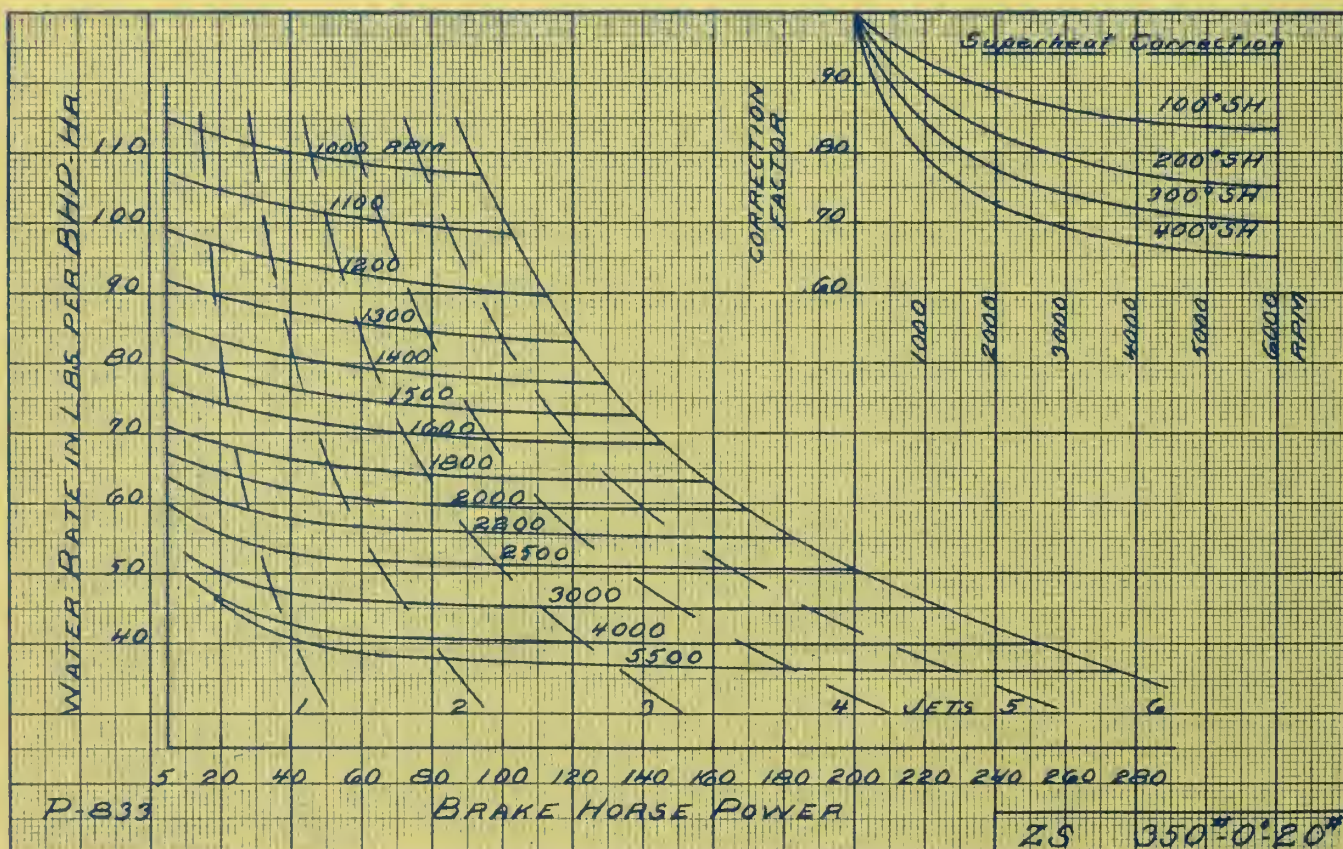
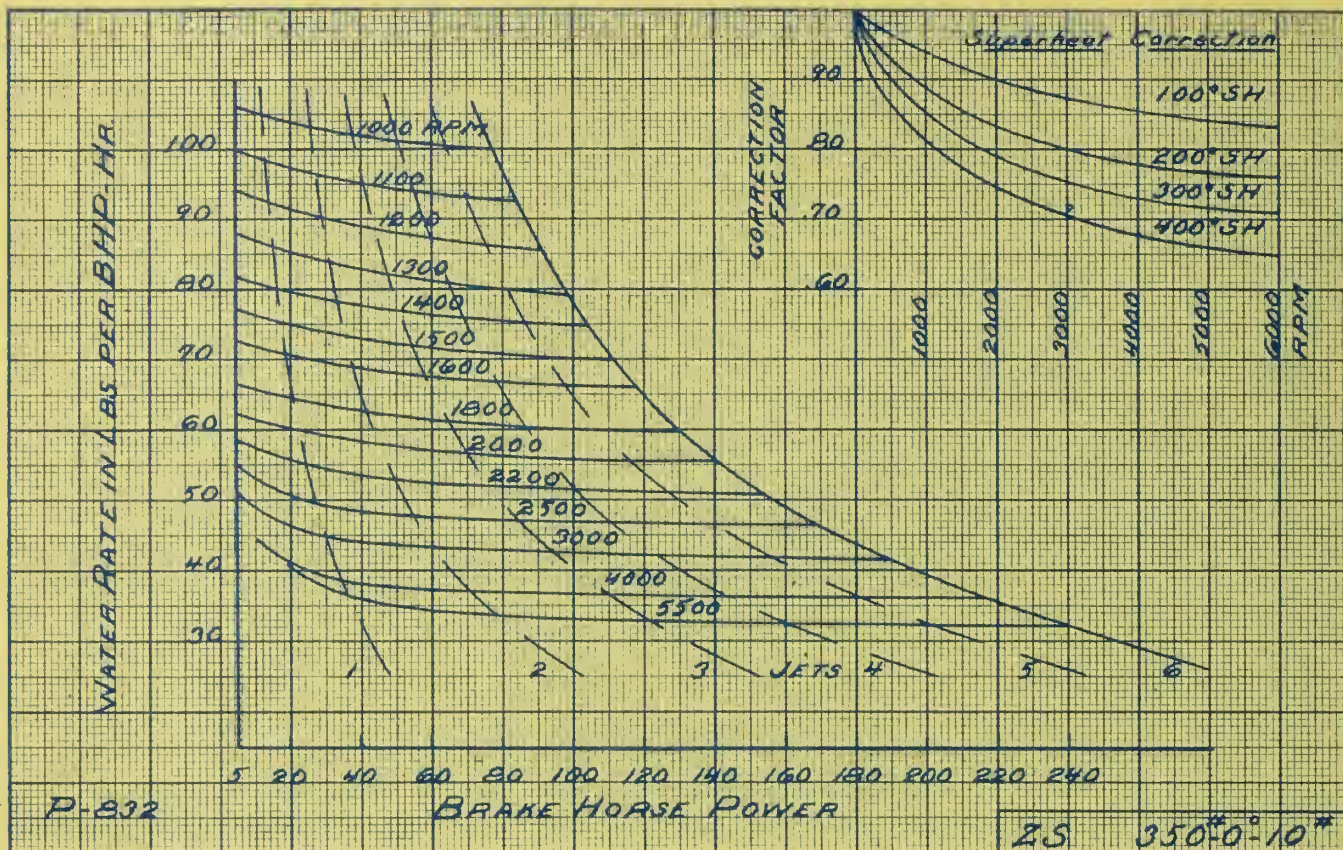
1st Clar. *melody*

Solo. Muted *Oboe (melody)*

Viol. Solo *ut. al Fine*

Oboe *fp*





COMMISSION for SYMBOLS, UNITS and NOMENCLATURE

ELECTRICAL UNITS

The systems of units now universally employed in Electric and Magnetic Measurements are based on the c.g.s. system and had their origin in the Reports of the Committee on Electrical Standards of the British Association. Their early history is contained in Appendix C to the second Report of that Committee in 1863, which was drawn up by Maxwell and Fleming Jenkin.

These systems were further developed by Maxwell in his Treatise on Electricity and Magnetism published in 1873. They are known as the Electrostatic and Electromagnetic systems of units. The Electrostatic system is based on the deductions drawn from Coulomb's experiments concerning the law of force between two small bodies charged with electricity. The electromagnetic system is based on the law of force between two magnetic poles which was deduced from similar experiments with magnets, on Oersted's discovery of the force between an electric current and a magnetic pole, Ampère's experiments on the force between two current-carrying circuits and Faraday's discovery of electromagnetic induction. Magnetization by induction is referred to in Appendix C (Section 9) but its consequences are not further developed.

On the assumptions actually made in the appendix the dimensions of the various electric and magnetic quantities are worked out on these two systems, and it is shown that the ratio of the units involved depends on a velocity which experiment has proved to be that of light.

In the Treatise Maxwell extends the results to include magnetic media and, following Sir William Thomson, introduces "Magnetic Induction" defined as the force on unit positive pole placed in a crevasse in the medium cut at right angles to the lines of force. Magnetic Force is defined as the force on a unit positive pole in an infinitely narrow long cylinder parallel to the lines of force—Sir William Thomson's Polar definition of Magnetic Force. Magnetic induction has therefore on this view the same dimensions as magnetic force and their ratio denoted by the symbol μ is a pure number. In developing the equations of the magnetic field the quantity μ is retained (sections 614, 615) with the statement that on the electromagnetic system of units it is only within magnetised matter that it has a value different from unity and that, on that system therefore, its value in a vacuum is unity. On that system it has no dimensions.

This identification of magnetic induction and magnetic force appears to be the cause of some of the difficulties and misunderstandings which have arisen in regard to the subject and have led in many countries to suggestions for some modification of the fundamental conceptions.

Another difficulty arises from the fact that in accordance with Maxwell's definitions 4π occurs in the measure of certain electrical quantities; attempts have been made to modify the definitions and to produce a "Rational system" of units which does not expressly involve 4π .

Probably, however, a difficulty which is more seriously felt arises from the fact that there is no such thing as a single isolated magnetic pole, neither can we realize a particle charged with a quantity e of electricity.

THE COMMISSION ON SYMBOLS, UNITS AND NOMENCLATURE OF THE International Union of Physics has been set up in order to facilitate discussion and if possible secure agreement on matters relating to units of International importance. The discussions which have for some time been in progress in many countries on Electrical Units and Nomenclature and the existence of a Committee of the International Electro-technical Commission, dealing specially with the side of the question of interest to Engineers, are sufficient evidence of the importance of the subject and of the need for its discussion by Physicists.

Accordingly at a recent meeting of the S.U.N. it was agreed to ask the National Committees of Physicists adhering to the Union to obtain from representative bodies and persons in their respective countries their views on the matter with suggestions as to a series of definitions and units which might replace those based on Maxwell's system as to which difficulty is felt and to send these to the Symbols, Units and Nomenclature Commission.

In replying to the enquiry it should be realised that it is essential that any new definition or scheme should, with the definitions retained from Maxwell, if any, form a consistent whole, covering all the physical quantities in ordinary use. Starting as Maxwell does from the force between two poles or possibly from Ampère's results as to the force between two circuits carrying currents or from some other fundamental properties the series of definitions should build up a consistent logical system, in which the various quantities employed are capable of measurement to the accuracy called for by modern electrical science.

It may be of assistance to indicate some of the suggestions which have been made to meet the difficulties:—(1) Dealing with a complete system, we may write for the electrical force between two charged particles ee'/Kr^2 and for the magnetic force between two poles $mm'/\mu r^2$ where K and μ have dimensions and are such that $1\mu/K$ is the square of the velocity of light in the medium considered. A consistent system can be derived from this, following Maxwell's lines, but without further knowledge the dimensions of a quantity of electricity or of a magnetic pole are both indeterminate. Moreover, the system is based on the assumed result of experiments which cannot be completely realized; an isolated magnetic pole does not exist.

According to Maxwell on the Electrostatic System K has no dimensions while those of μ are T^2/L^2 on the Electromagnetic system μ has no dimensions but those of K are T^2/L^2 .

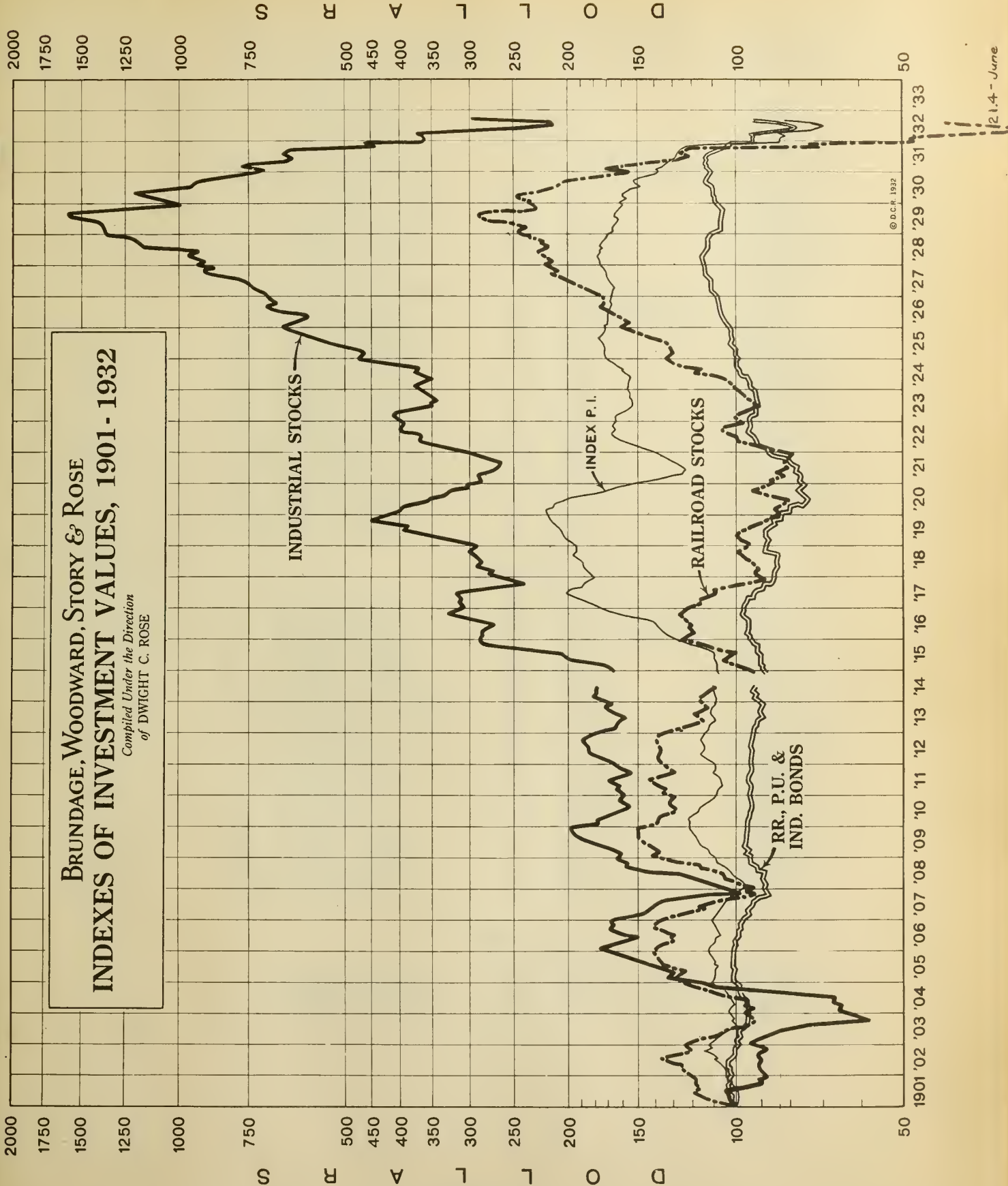
Various modifications in Maxwell's scheme have been suggested to meet some of the above difficulties and to avoid the introduction of the 4π which appears in some of the equations.

(2) Dealing with Magnetic Units only we may start from definitions of Magnetic Flux given by the expression $\int_0^t E dt$ where E is the Electromotive force in volts round a circuit through which the flux is measured and Magnetomotive force $= NI$ where I is current in Amperes and N a numeric. Such a method assumes that we have defined and can measure volts and amperes.

As another example the following statement as to magnetic induction may be given—Magnetic Flux per unit area is measured by removing from a magnetic field a small circular coil of wire having a single turn of area S and resistance R and measuring the quantity Q of electricity which flows round the circuit. The Magnetic Induction normal to the circuit is given by $B = RQ/S$.

This is in effect the same as the method given above and implies that we have defined and can measure Q and R .

December, 1931.



No.	Name of Person Listed	Age	Residence, 1931	Occupation
51	McDonald, J. Carroll	29	same	instructor
51	McEwan, Albert	31	same	janitor
51	Nash, Luther R.	62	same	valuation expert
51	Neill, Albert	62	same	retired
51	Towles, Thomas	42	same	salesman
51	Wetherell, Charles B.	74	same	accountant
51	Woodruff, Arthur	26	156 Mt. Auburn St.	none
52	Yves, Henry Buhler	38	993 Memorial Drive	accountant
55	Colt, Henry F.	32	same	salesman
57	Ware, James Lindsay	23	same	student
59	Sharp, Frederick D.	39	same	U.S. Army
60	McCarthy, Arthur	22	same	salesman
60	McCarthy, Dennis F.	59	same	electrician
61	Ames, Oakes I.	39	same	consultant
62	Massey, Arthur B.	54	same	janitor
63	Pertzoff, Constonatin A.	33	18 Martin St.	architect
64	Heard, Nathan	55	987 Memorial Dr.	lawyer
64	Heard, Nathan Jr.	21	Univ. of Virginia	clerk
67	Barnes, Francis J.	69	same	physician
69	Grant, William H.	64	same	engineer
79	Fowler, John E.	40	same	manufacturer
83	Davis, Francis	63	same	physician
83	Folsom, Frank E.	66	same	salesman
83	Harding, Verger	40	same	janitor
83	Hartzog, Justin R.	39	same	architect
83	Hines, Hugh S.	44	same	insurance
83	Hutchinson, John	44	same	grocer
83	Rich, Edward D. Jr.	26	same	draftsman
83	Taylor, Warren O.	38	same	stock broker
83	Tupper, William E.	54	same	confectioner
83	Welch, Joseph	23	same	pattern maker
83	Wells, Louis R.	59	Dana	teacher

BREWER STREET

5	Barnes, James H.	45	same	machinist
5	Fry, Thomas J.	32	194 Fayerweather	machinist
5	Holman, Fred A.	42	115 Mt. Auburn St.	laborer
6	Murphy, Jeremiah	72	same	none
6	Ruggles, Arthur B.	62	same	credit clerk
6	Thorsen, Frank	56	same	engineer
7	Karaoglonian, Varton	40	same	rug repairer
7½	McQuillan, Joseph E.	23	same	bellman
8	Kenny, James J.	40	Boston	U.S. Customs Guard
8	Price, Elmer	31	48 Hudson St.	milk driver
8	Tibbetts, Charles A.	38	same	salesman
8	Ward, James	62	same	manager
11	Doherty, Frank	28	293 Huron Av.	laborer
11	Egan, Michael	37	17 Gerry St.	porter
11	Rogan, Daniel J.	28	same	pipe fitter
11	Ward, John	29	293 Huron Av.	laborer
11A	Doherty, Thomas P.	40	same	chauffeur
11A	Howard, Michael	65	same	foreman
11A	Lahiff, Michael	30	same	unemployed
12	Cole, Edward	49	same	gardner
12½	Donohue, Francis D.	26	152 Berkshire St.	shipper

CHAPMAN PLACE

1	White, Alfred	64	same	gardner
3	Bennett, Harold G.	31	same	carpenter
6	O'Sullivan, James T.	36	21 Cushing St.	laborer
8	Keating, Alden L.	27	same	postal clerk

No.	Name of Person Listed	Age	Residence, 1931	Occupation
8	Kee, Wing	51	same	laundry

ELIOT STREET

10A	Bootherton, Francis T.	23	same	baker
10A	Connor, John	48	same	laborer
10A	Hammarstrom, Ernest E.	22	Somerville	dish washer
10A	Merrill, Ned L.	55	Maine	steward
10A	Nash, Michael	44	same	laborer
10A	Richardson, Joseph	45	same	shipper
10A	Rollings, Henry H.	44	same	none
12	Cheney, George W.	21	same	engraver
12	Cooney, Edward F.	71	same	plasterer
12	Goodine, Edward	67	same	motorman
12	Gregory, Rudolph	38	Lynn	machinist
14A	Collard, Niel	27	1168 Mass. Av.	chauffeur
14A	Connolly, Joseph M.	43	same	railway operator
14A	Durnin, Thomas	42	same	railway operator
14A	Elmer, Hugh	22	Ohio	none
14A	Mulvihill, John T.	35	same	letter carrier
14A	Murphy, John A.	39	Newburyport	garage man
14A	Mustard, Thomas D.	23	Ohio	none
14A	Washburn, Charles W.	82	12 Eliot St.	none
16	Irvine, Valentine	39	1 Coolidge Pl.	porter
16	Roberts, John W.	58	same	brick layer
18	Wheeler, Charles M.	26	same	floor garage
20B	Gifford, Waldo H.	50	same	janitor
22	Tucker, Joseph	39	same	salesman

FARWELL PLACE

11	Nash, William	41	same	broker
14	Sylvey, Anthony	36	same	chauffeur
15	Hulse, Frederick	26	same	student
15	Morris, Henry	51	same	rubber worker
15	Morris, John H.	23	same	attorney
15A	Anderson, Frita	21	same	painter
15A	Carlson, Carl	41	same	woodworker
15A	Hafford, Daniel	30	same	machinist helper
15A	Sandberg, John	44	same	machinist
15A	Woolard, William	50	same	machinist
15B	Hyde, John	33	same	laborer
15B	Munroe, Edward	22	Allston	elevator operator
16	Lynch, William	26	same	teacher
17	Shoemaker, Robert C.	28	Minnesota	manager
17	Stratton, Herbert	60	same	manager
18	Browne, Gordon	31	Cohasset	clerk
19	Hill, J. Howard	70	same	laborer
20	Hall, Raymond	25	same	engineer
22	McKinnon, Douglas A.	29	same	musician
24	McCarthy, Jeremiah J.	56	same	chauffeur

FULLER PLACE

3	Wyman, Jeffries	68	same	retired
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GARDEN STREET

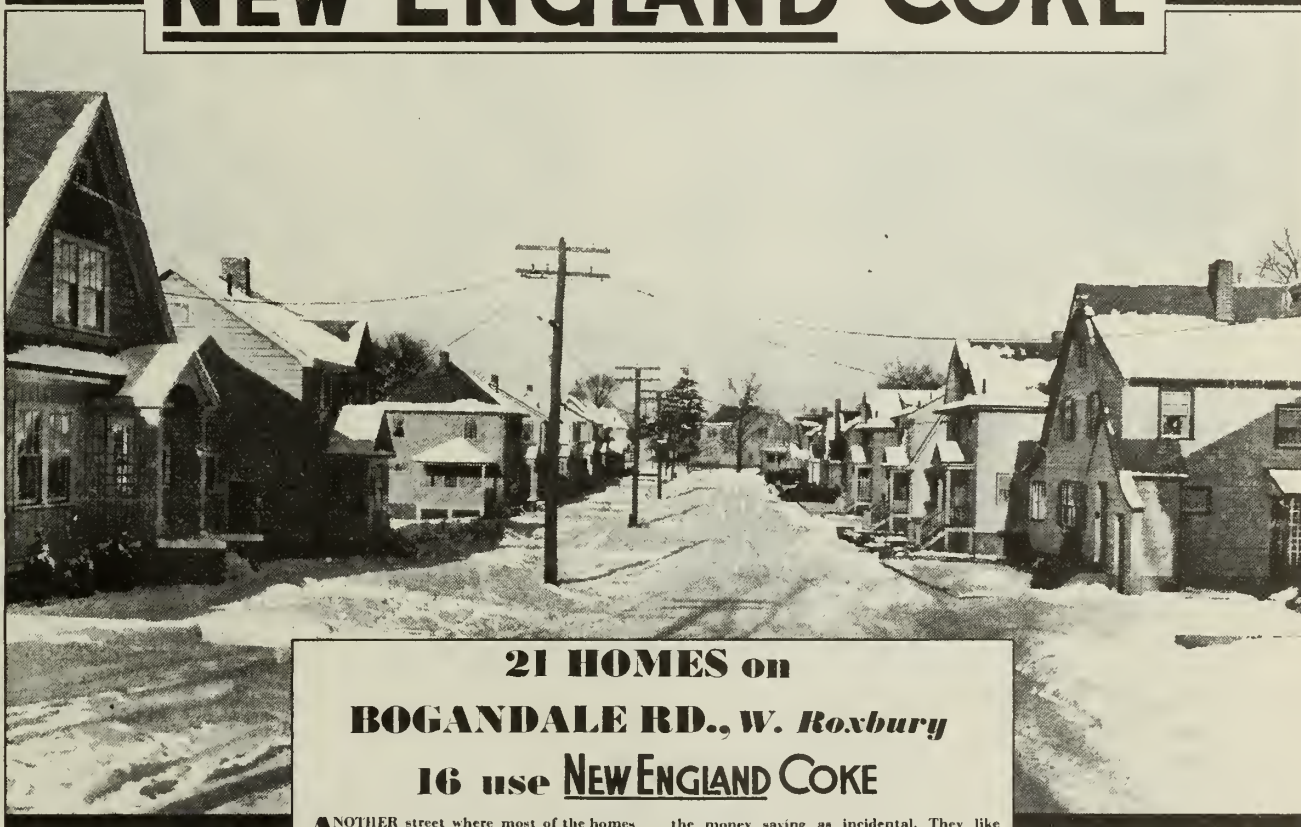
1	Glenn, C. Leslie	32	same	clergyman
2	Norris, Albert P.	57	same	physician
2	Norris, John Wyeth	20	same	student

West Roxbury

like hundreds of other communities

Knows and Uses

NEW ENGLAND COKE



**21 HOMES on
BOGANDALE RD., W. Roxbury
16 use NEW ENGLAND COKE**

ANOTHER street where most of the homes use New England Coke—where the homes are kept warm and comfortable with this dependable fuel. There are streets like this in your neighborhood, hundreds of such streets all over Metropolitan Boston where the constantly increasing demand for New England Coke proves its quality and its economy. Of course, New England Coke will save money for you, but your neighbors who use it regard

the money saving as incidental. They like New England Coke best because it gives long-lasting heat, quick heat . . . because it is so easy to handle, has so little ash and is covered with a money-back guarantee of absolute satisfaction. Order it from your neighborhood branch office or from your fuel dealer who displays the blue and white New England Coke shield, or from NEW ENGLAND COKE CO., 250 Stuart St., Boston, Mass., Cokephone HUBbard 4670.

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"Your neighbors know"

*The BLENDED Fuel
that's MADE to be GOOD*



*For Any Type of Heater
In Every Kind of Home*

WOMAN'S WORLD

OF
FASHION AND
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THE NEW ENGLAND COME
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NEW ENGLAND COME
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WOMAN'S WORLD
PUBLISHED BY THE

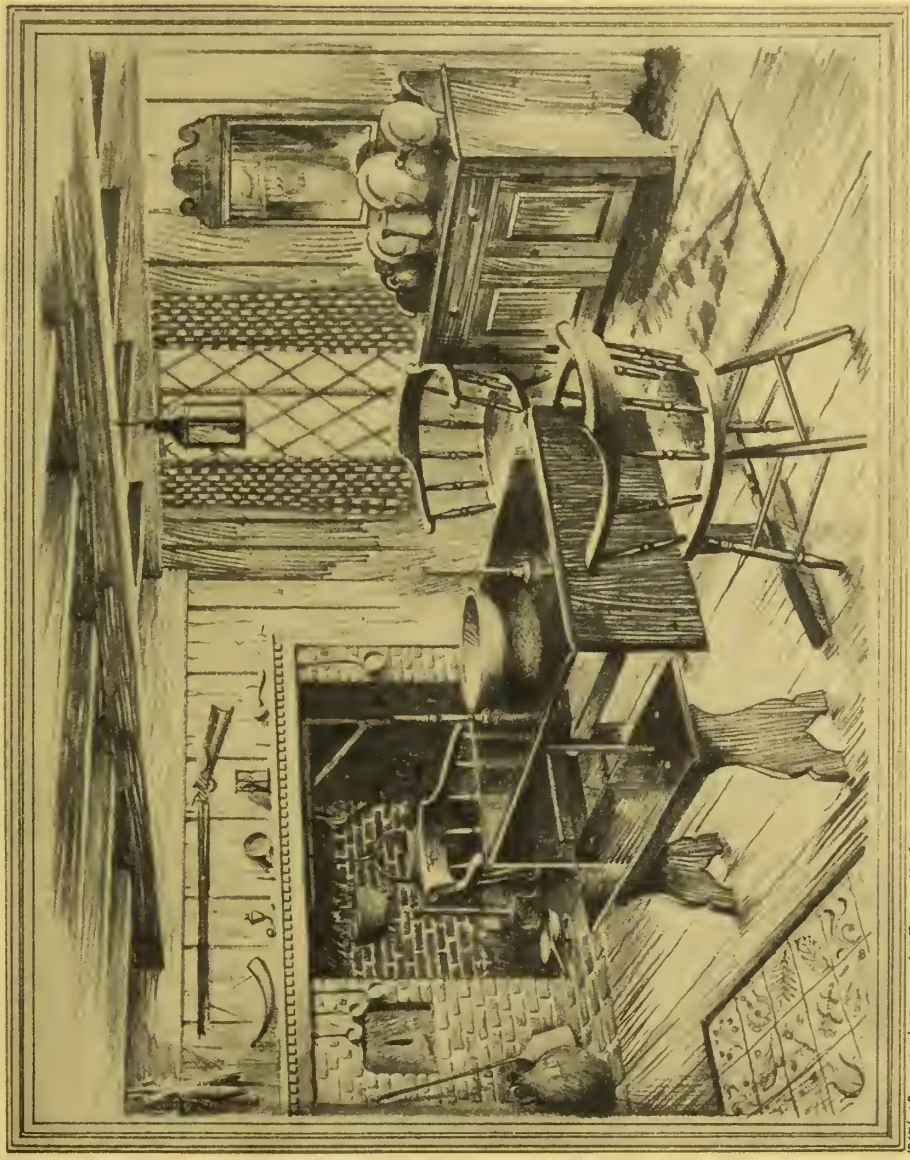
TYPE-		RYTHEDON PRODUCTION CORP NEWTON, MASS.				DATE	
		MOUNTING SPECIFICATION				REV.	
BRIDS-	01	02	03	04	SHIELD (OUTER)-		
Drawing P-					Material-		
Drawn -					Blank-		
Orth. (1/2")					Ch. (1/2")		
Wire (1/2")					Length (1/2")		
Map (1/2")					Temp.		
Steel -					Type		
TDI -					TOP LEAD WIRE-		
TI -					SETTER CUP-		
State					Set		
Prod. dia. -					Set		
Mod. (1/2")					Set		
Ord. A -					SPEC. PARTS & INSTRUCTIONS		
P. B -							
A. C -							
I. D -							
- E -							
- F -							
- G -							
WIRE (1/2")							
SPACERS							
DIMENSIONS OF FINISHED MOUNT-							
Drawn (1/2") from center of frame							
Wire (1/2") from center of frame							

Distance from top of press to

Overall height from bottom of flare

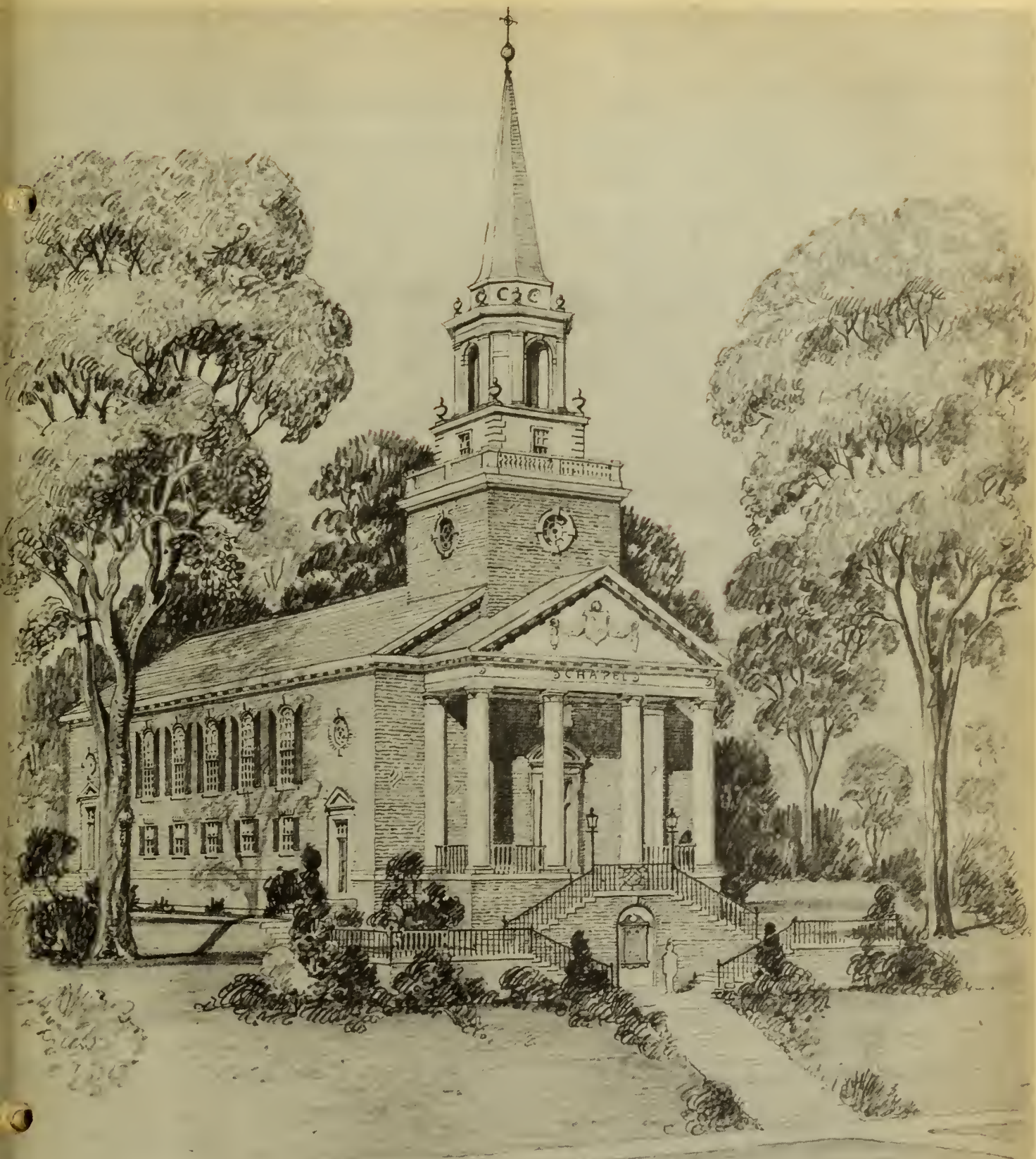
DIMENSIONS OF FINISHED MOUNT-

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10478-10 BROWN-10515 SCHMIDT-422 TABLE-422 SEWER-419 HIRSH
The GREENWOOD BY CONANT-BALL





J. J.

CHAPEL

COLBY COLLEGE

- 198500 MAJESTY OF E.D.F.**
Sire Hustler of Cherry Grove 183625. Dam Lovetta of Homestead 77730.
Born Nov. 7, 1931. B&O: E. J. Hedblom & Sons, Little Falls, Minn.
- 198501 ROSE'S ROY OF PLEASANT VIEW**
Sire Dundee Guardsman 156155. Dam Alta Rose of Indian Hill 127553.
Born Feb. 2, 1932. B&O: John Moffat, New Alexandria, Pa.
- 198502 BLONDY'S TOP NOTCH**
Sire Fircrest Belligerent 147136. Dam King's Blondy 227506.
Born Sept. 14, 1931. B&O: Charles A. Orr, Fresno, Calif.
- 198503 CLARE'S JUNIOR OF MAPLE SQUARE**
Sire Mary's Junior of Red Rock 88064. Dam Clare of Green Grove 85545.
Born Aug. 19, 1931. B&O: Charles E. Dickinson, Troy, Pa.
- 198504 MASTERPIECE'S JEFF**
Sire Flintarrow Masterpiece 156330. Dam Let Me Try's Mercy 289586.
Born Aug. 23, 1931. B&O: Est. E. R. Downs, Fulton, N. Y.
- 198505 EMIL OF EVERGREEN**
Sire Marjohnelle Peerless 173683. Dam Dainty of Maple Corner 300750.
Born Sept. 4, 1931. B&O: Emil Karkau, Lansing, Mich.
- 198506 DEXTER OF LAUREL RIDGE FARM**
Sire Rima Boy of Green Springs 106645. Dam Daisy May of Laurel Ridge Farm 224169.
Born Dec. 21, 1930. B&O: Thomas L. Hoffman, Northumberland, Pa.
- 198507 SLOGAN'S FRED OF THE PINES**
Sire Edna's Slogan of Rose Valley 145906. Dam Dandy's Princess of the Pines 217597.
Born Oct. 26, 1931. B&O: Hattie R. Shaw, Hixton, Wis.
- 198508 CONSERVATOR OF THE CLEARING**
Sire Atamanslt Mustapha 151963. Dam Imp. Fascination V. of Moulipied 308892.
Born Sept. 8, 1931. B&O: Mary E. Gurnett, Kingston, Mass.
- 198509 MARGIE'S SUPREME**
Sire Ellie's Maxim of Shantituck 152184. Dam Sheik's Margie 235437.
Born Sept. 2, 1931. B&O: Oscar & Ralph R. Troolin, Cambridge Minn.
- 198510 WRIGHT'S SITTING BULL**
Sire Wright's Ultra King 150618. Dam Marva of the Catskills 111608.
Born July 25, 1929. B&O: Ralph G. Wright, Williamsville, N. Y.
- 198511 SUPERIOR OF BIRCHLAWN**
Sire Buttergold Superior 181672. Dam Susie May of Birchlawn 293499.
Born Sept. 18, 1931. B&O: A. V. Garlock, Bemidji, Minn.
- 198512 VALLEY VIEW VALOR**
Sire Woodside Countess 2d's Sybaritic 144003. Dam Woodside Beauty Girl 293395.
Born Aug. 21, 1931. B&O: Isaac B. Mock, Myerstown, Pa.
- 198513 ULTRA KING'S RECORDER**
Sire Herdlea Ultra King 64259. Dam Princess Mildred of Walnut Valley 115768.
Born Sept. 11, 1931. B&O: W. H. Hutchison & Son, West Alexander, Pa.
- 198514 LONGVIEW FORESTER**
Sire Mixer Imperial 107513. Dam Pollyana of Longview 246507.
Born Feb. 20, 1930. B&O: Henry Burden, Cazenovia, N. Y.
- 198515 ANCHOR GEM OF FAWNDALE**
Sire Valley Gem Soldier 46066. Dam Anchor Lily of Outlook 106718.
Born March 9, 1931. B&O: W. E. Fordyce, Sunnyside, Wash.
- 198516 COEUR de GEM OF FAWNDALE**
Sire Valley Gem Soldier 146066. Dam Coeur d'Alene Buttercup 164178.
Born April 28, 1931. B&O: W. E. Fordyce, Sunnyside, Wash.
- 198517 SOLDIER OF FAWNDALE**
Sire Valley Gem Soldier 146066. Dam May Queen of Fawndale 212529.
Born Aug. 29, 1931. B&O: W. E. Fordyce, Sunnyside, Wash.
- 198518 CLEARBROOK DANDY**
Sire Chicona Verner 133584. Dam Clearbrook Daisy 220630.
Born Sept. 18, 1930. B&O: Clyde E. Ringo, Mulino, Oregon.
- 198519 BLENHEIM PRINCE SELECT**
Sire Beechwood Prince Select 130365. Dam Bloomfield Mary Belle 236707.
Born Sept. 24, 1931. B&O: J. O. Francis, Jr., Phoenix, Md.
- 198520 QUEEN'S ROB OF MIDDLE**
Sire Glenciff Master 153990. Dam Rose City Queen of the Pacific 165721.
Born Sept. 20, 1931. B&O: Arthur S. Moulton, Ridgefield, Wash.
- 198521 BOULDER BRIDGE CENTAUR**
Sire Langwater Waldorf 128541. Dam Radisson's Bountiful 204312.
Born Aug. 8, 1931. B&O: Eben Atwood, Wayzata, Minn.
- 198522 CHICOVAR ALPHAZAY**
Sire Chicona Bolivar 173274. Dam Minnie of Hughes Place 290656.
Born Nov. 4, 1931. B: D. R. Hughes, Yelm, Wash.
O: D. W. Barclay, Burlington, Wash.
- 198523 RICHEL MODEL KING**
Sire Coventry Model May King 97473. Dam Springdale May Lyndora 126067.
Born Aug. 21, 1931. B: W. Paul Wagner, Hartsville, Ohio.
O: Erwin Bros., Bowdill, Ohio.
- 198524 ECHO AMBER'S ORION**
Sire Falcon's Actor 167230. Dam Echo Amber 259772.
Born Dec. 11, 1931. B&O: Mrs. James McF. Baker, Litchfield, Conn.
- 198525 SUPERB'S FOREMOST**
Sire Foremost's Superb 130291. Dam Mixer Farm Fairmaid 124225.
Born July 9, 1931. B&O: J. C. Penney-Gwinn Corporation, Hopewell Junction, N. Y.
- 198526 GUIDO'S HECTOR OF RED RIVER**
Sire Corium Ultimas' Guido 121520. Dam Regent's Flosse of Red River 194659.
Born Nov. 7, 1930. B&O: William R. Wendorff, Shawano, Wis.
- 198527 F'S PROMOTER BOY**
Sire Phillips Promoter 126650. Dam Foster Lakes Bessie 320195.
Born Aug. 11, 1931. B&O: W. O. Fenstermaker, Marion, Ind.
- 198528 SAMMY BOY OF NORTH-LAND**
Sire Max of Ioka 176462. Dam Queen Victoria of Kathio 135823.
Born Aug. 13, 1931. B&O: Maurice Van Risseghem, Onamia, Minn.
- 198529 SPOT'S LINDY OF NEMITZ FARM**
Sire Aristor of Smallidge Farm 95398. Dam Spot of Oak Grove 160290.
Born April 10, 1929. B&O: Henry E. Nemitz, Bridgman, Mich.
- 198530 DOON'S DUKE OF MAPLE GROVE**
Sire Bonnie Doon Leader 155695. Dam Sunmaid of Maple Grove 265448.
Born Sept. 13, 1931. B&O: Stark Bros., Athens, Wis.
- 198531 LEADER'S FOREMOST RAIDER**
Sire Edgemere Leader 115415. Dam Foremost Lillian of Breidablik 225327.
Born Sept. 22, 1931. B&O: Ebba V. Krebs, Wilmington, Del.
- 198532 NATELKA'S MASTER OF BREIDABLIK**
Sire Eiletta's Master of Bdk. 166719. Dam Breidablik Natelka 79077.
Born Oct. 22, 1931. B&O: Ebba V. Krebs, Wilmington, Del.
- 198533 McKIELVEY OF WOODSIDE FARM**
Sire Chieftain's Ottawa of Roseneath 125661. Dam Flute of Woodside Farm 296543.
Born Aug. 24, 1931. B&O: J. F. Gilchrist, Sharon, S. C.
- 198534 SOUSA**
Sire Gayoso Oliver 148643. Dam Oriental Suzanne 220859.
Born Dec. 13, 1930. B&O: W. H. Bosworth, Algona, Iowa.
- 198535 KATIE'S BUSTER OF EDGEWOOD**
Sire Rosie's Ultra King of Oakhurst 6th 94349. Dam Harvester's Katie 318012.
Born Dec. 5, 1931. B&O: W. D. Graham, Mount Ulla, N. C.
- 198536 PEARL'S LAD OF NUT GROVE**
Sire Woodside Fantom's Lad 167318. Dam Fannie's Pearl of Nut Grove 248368.
Born Jan. 27, 1931. B&O: Paul H. Lengel, Pine Grove, Pa.
- 198537 DEMPSY OF YAKIMA GUERNSEY FARM**
Sire Martha's Prince of Fawndale 170420. Dam Lassie's Irene of Fawndale 283063.
Born Aug. 18, 1931. B&O: C. O. Poole, Sunnyside, Wash.
- 198538 DEER CREEK JERRY**
Sire Rancho Royalist 171445. Dam Deer Creek Dora 299024.
Born Sept. 15, 1931. B&O: Kerr Bros., Sheridan, Oregon.
- 198539 PERRY FARM JERRY**
Sire Shorewood Winner 156522. Dam Beulah's Virginia 236394.
Born Sept. 20, 1931. B: Miss Freda Felton, Boaz, Wis.
O: Jules Perry, New Bedford, Mass.

198540 HORN LAKE KING

Sire Gayoso Buttercup's King 185799. Dam Cherub's Fond Girl of Rose Lawn 239270.
Born Sept. 1, 1931. B&O: W. C. Crawford, Williston, Tenn.

198541 WILLISTON KING

Sire Gayoso Buttercup's King 185799. Dam Carrie of Woodland Echo 251941.
Born Oct. 1, 1931. B&O: W. C. Crawford, Williston, Tenn.

198542 REX BEACH OF THE WILLOWS

Sire Silver's Golden-boy 166564. Dam Octie Morn's Pride 245892.
Born Aug. 21, 1931. B&O: Myrtle W. Helgeson, De Soto, Wis.

198543 WALDORF CHERUB

Sire Langwater Governor of Carteret 79617. Dam Resolute's Bettina 186574.
Born Oct. 4, 1931. B&O: Oscar F. Kinney, North Chatham, N. Y.

198544 WALDORF GAY BOY

Sire Langwater Governor of Carteret 79617. Dam Waldorf Miss Springfield 193719.
Born Oct. 18, 1931. B&O: Oscar F. Kinney, North Chatham, N. Y.

198545 BOULDER BRIDGE CIMARRON

Sire Caumsett Harvester 145445. Dam Boulder Bridge Cinderella 266504.
Born June 27, 1931. B&O: Boulder Bridge Farm Co., Minneapolis, Minn.

198546 BOULDER BRIDGE LA FRANCE

Sire Caumsett Harvester 145445. Dam Boulder Bridge Dahlia 325698.
Born June 27, 1931. B&O: Boulder Bridge Farm Co., Minneapolis, Minn.

198547 OREGON AMBASSADOR

Sire Oregon Cherub's Ambassador 169094. Dam Oregon Diamond's Ina 262247.
Born Dec. 12, 1931. B&O: J. Cruickshank & Sons, McMinnville, Oregon.

198548 ROSCO OF MANITOU

Sire Lishman's Leonidas 150666. Dam Trixie's Maggie of Manitou 263228.
Born Aug. 22, 1931. B&O: George S. Gilbertson, Manitowoc, Wis.

198549 FIRCREST LA FRANCE PREMIER

Sire Evaline's Captivator of Grangeville 148660. Dam La France of Braloe 93617.
Born Aug. 20, 1931. B&O: A. Macrae Smith, Bellingham, Wash.

198550 QUEENE'S RICH BOY

Sire Lassie's Chatham 156452. Dam Larrah Queene of Moore 330322.
Born Sept. 14, 1931. B&O: J. M. Davis, Vass, N. C.

198551 BIG BIRCH DAIRY'S WISCO

Sire Hilltop Butterfat Hambro 156054. Dam Lady Beauty of Maple Ridge 212971.
Born Sept. 28, 1931. B&O: Henry Knapmiller, Birchwood, Wis.

198552 HERD OF BIG BIRCH DAIRY

Sire Hilltop Butterfat Hambro 156054. Dam Pearl of Poskin 157039.
Born Nov. 15, 1931. B&O: Henry Knapmiller, Birchwood, Wis.

198553 COUNT OF WELBEC FARMS

Sire Welbec Knight of Auburndale 171946. Dam Winnie of Blue Clay 183478.
Born Nov. 25, 1931. B&O: Chester Wells, Wyalusing, Pa.

198554 ROBIN HOOD OF SALONA FARMS 2D

Sire Robin Hood of Salona Farms 164949. Dam Ella's Love of Stone Hall 2d 296950.
Born Oct. 25, 1931. B&O: Henry M. Warfield, Timonium, Md.

198555 MEADOW BROOK'S ZUMBRUN

Sire Langwater Promoter 114979. Dam Morven's Fame 292813.
Born Sept. 2, 1931. B&O: John H. Hampshire, Hampstead, Md.

198556 IRENE'S LEADER OF MEADOW VIEW

Sire Hel'li Do Leader 178664. Dam Alice May's Princess Irene 298612.
Born Oct. 20, 1931. B&O: Louis Pinzka, Mickleton, N. J.

198557 BRYNCDOD'S LANGWATER PETER

Sire Langwater Peter Pan 116859. Dam Semiramis of Sycamore Farms 169642.
Born Jan. 4, 1932. B&O: Frank B. Foster, Phoenixville, Pa.

198558 HAVIEM BUDDIE MAY KING

Sire Raymond King of the May 117797. Dam Sir Haviem Cherub's Senora 194329.
Born Aug. 24, 1931. B&O: Emory C. Meltz, Appleton, Wis.

198559 MOCCASIN BROOK BAKER

Sire Roselyn's King of Fox Run 127061. Dam Clover Moccasin 275267.
Born Sept. 2, 1931. B&O: George O. Gale, Petersham, Mass.

198560 ROYAL OF P. V. DAIRY FARM

Sire Royal's Pride of Avalon 149052. Dam Mayflower's Joanna of P. V. Dairy Farm 197875.
Born Aug. 25, 1931. B&O: A. J. Robinson & Son, Greenville, Pa.

198561 BLUE CROSS ALLYSE'S GENERAL

Sire Ultra Prince of Blue Cross 155425. Dam Blue Cross Raritan's Allyse 272788.
Born Sept. 25, 1931. B&O: O. H. Stanford, Cambridge Springs, Pa.

198562 RICHARD OF MAPLEWOOD

Sire Circle J. Cherub's Rembrant 126187. Dam Ventura of Maplewood 159156.
Born Jan. 10, 1931. B&O: John B. Johnson, Pasadena, Calif.

198563 HERO OF WOLF CREEK

Sire Beechwood Prince Carroll 170501. Dam Wolf Creek Maid of Honor 258635.
Born Aug. 1, 1931. B&O: Emma Guffey Miller, Slippery Rock, Pa.

198564 NELL'S KING OF FERN HILL

Sire Gipinda's King of Fern Hill 56881. Dam Nell of Fern Hill 247790.
Born Oct. 25, 1930. B&O: Joe Cramer, Menomonie, Wis.

198565 CEDAR POINT VALENTINE

Sire Beausite Valentine's Honour 155344. Dam Imp. Rose II. of Balmoral 253769.
Born Sept. 27, 1930. B&O: George E. Learnard, Greenwich, Conn.

198566 BEAUSITE VALENTINE'S REX

Sire Beausite Valentine's King 169246. Dam Imp. Sweet Brier V. of Bickleigh 182645.
Born Nov. 28, 1931. B&O: George E. Learnard, Greenwich, Conn.

198567 OX BOW JUNE'S HENRY

Sire Henry Ellis of Ox Bow Farm 156833. Dam Fletcher's June of Four Mile 93957.
Born Sept. 6, 1931. B&O: Ox Bow Farm, Alpena, Mich.

198568 OX BOW AUGUST'S KING

Sire King Cherub of Ox Bow Farm 176241. Dam August of Ox Bow Farm 294543.
Born Sept. 9, 1931. B&O: Ox Bow Farm, Alpena, Mich.

198569 OX BOW FLORENCE'S KING

Sire King Cherub of Ox Bow Farm 176241. Dam Florence of Ox Bow Farm 221373.
Born Sept. 20, 1931. B&O: Ox Bow Farm, Alpena, Mich.

198570 OX BOW BROOKWOOD ECHO

Sire Imp. Echo of Myrtle Place 141225. Dam Eunice of Echo Lodge 225610.
Born Nov. 18, 1931. B: John Endicott, Bloomfield Hills, Mich.
O: Ox Bow Farm, Alpena, Mich.

198571 OX BOW GOLDEN'S KING

Sire King Cherub of Ox Bow Farm 176241. Dam Golden June of Ox Bow 243750.
Born Nov. 28, 1931. B&O: Ox Bow Farm, Alpena, Mich.

198572 OX BOW TWIST'S HENRY

Sire Henry Ellis of Ox Bow Farm 156833. Dam Queen of Orchard Twist 273992.
Born Dec. 8, 1931. B&O: Ox Bow Farm, Alpena, Mich.

198573 OX BOW VIOLET'S KING

Sire King Cherub of Ox Bow Farm 176241. Dam Violet of Ox Bow Farm 304020.
Born Jan. 19, 1932. B&O: Ox Bow Farm, Alpena, Mich.

198574 GREEN MEADOW CLIMAX

Sire Green Meadow Coronation King 109429. Dam Springside Celia 167150.
Born Aug. 26, 1931. B&O: Arthur G. Galusha, Williamstown, Mass.

198575 SPLENDID PRINCE ROYAL

Sire Roughwood Splendid 173901. Dam Duchess of the Maples' Linda 193662.
Born Aug. 25, 1931. B&O: Lloyd J. Frazier, East Corinth, Me.

198576 SPLENDID SON OF DUCHESS

Sire Roughwood Splendid 173901. Dam May Boy's Duchess of the Maples 164712.
Born Aug. 28, 1931. B&O: A. M. Frazier, East Corinth, Me.

198577 SILVER BOY BONNIE OF PLAINVIEW

Sire Silver Boy of West Grove Farm 109716. Dam Moosehorn Bonnie Rose 235702.
Born Aug. 23, 1931. B&O: G. C. Borchardt, Carlton, Minn.

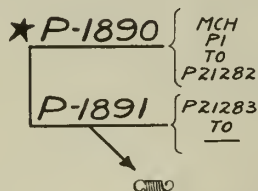
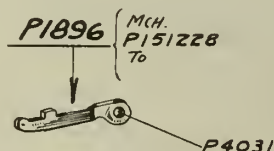
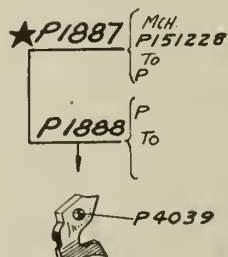
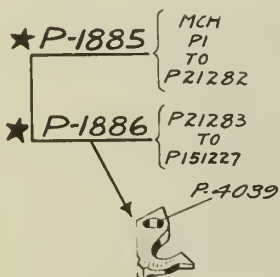
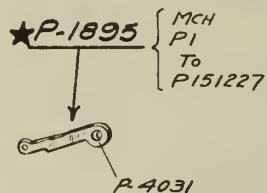
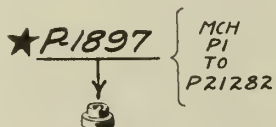
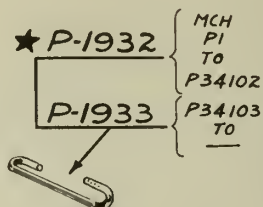
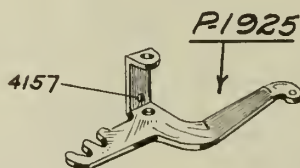
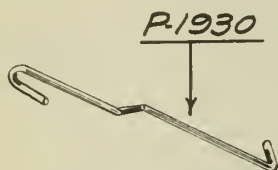
198578 CHERUB'S LADDIE OF WHITE HALL

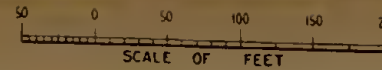
Sire Frances' Cherub of Blue Ridge 122524. Dam Katrina of White Hall 244398.
Born Aug. 22, 1931. B&O: J. Harlan Frantz, Waynesboro, Pa.

198579 MASTER'S CHIEF OF LANESIDE

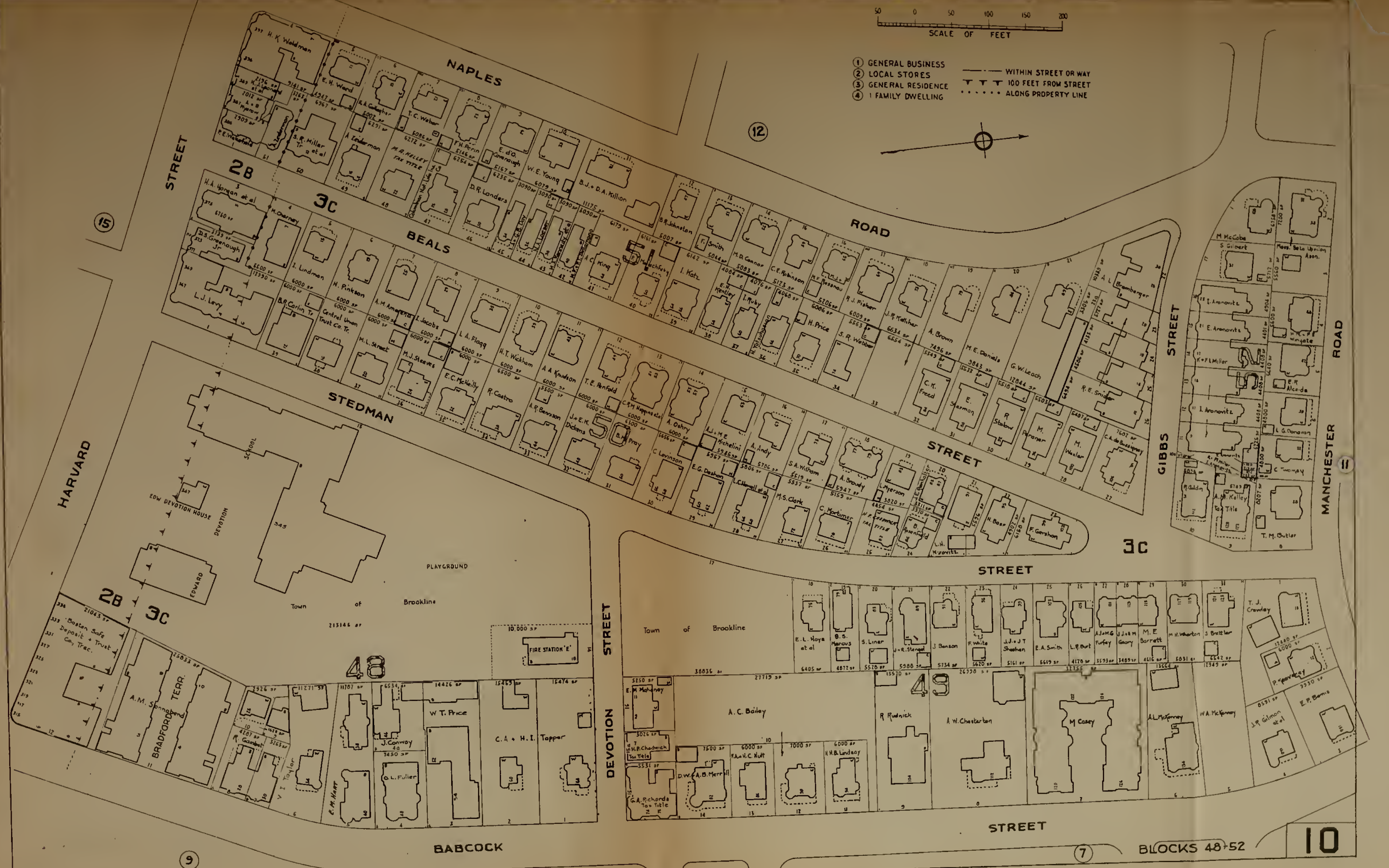
Sire Cherub's Master Fern of Laneside 136262. Dam Cherub's Louise of Laneside 284738.
Born Sept. 29, 1931. B&O: J. H. Stewart, Clear Lake, Wis.

- 1441821 CLOVER BELLE HENGERSVELD WAYNE, July 25, 1929; John Alexander; Hengerveld Wayne Homestead Lad 414522 - Clover Pontiac Hengerveld Belle 717068.
- 1441822 TWILIGHT WAYNE HENGERSVELD WAYNE, Sept. 27, 1929; John Alexander; Hengerveld Wayne Homestead Lad 414522 - Rosa Clover Segia Johanna B10370.
- 1441823 MINITA PONTIAC HENGERSVELD WAYNE, Sept. 29, 1929; John Alexander; Hengerveld Wayne Homestead Lad 414522 - Prunella Pontiac Hengerveld 1196789.
- 1441824 VALLE VU CREAMELLE ORMSBY, Feb. 14, 1930; V. G. Davis; Ideal Ormsby Hengerveld 536157 - Fairsland Creamelle Korndyke Girl 1244873.
- 1441825 ROSEMARY COLANTHA BELLE, Sept. 25, 1929; Richard Tyde; Wyoma Colantha Calamity Warren 521689 - Trilby Segis Belle 1130554.
- 1441826 ENSIGN HILLVIEW SOLDENE KORNDYKE, Feb. 28, 1927; Carl V. Clarke; C. A. Stebbins; Colantha Pietje Glista Lad 477245 - Hillview Soldene Korndyke 729346.
- 1441827 MARY DE KOL SADIF VALE JOHANNA, June 6, 1927; Hattie Stebbins; Prince Paula Inka 384125 - Setsy De Kol Sadie Vale Johanna 808860.
- 1441828 FAY BURTONDALE WINONA 2d, Mar. 28, 1928; Wilber Sigford; S & H Ona Korndyke Segis 514027 - Fay Burtondale Winona 958916.
- 1441829 MARY VEEMAN DE KOL BEETS, Jan. 11, 1929; Henry Schmidt; Sir Veeman Ollie Bess 486464 - Mary De Kol Ollie Ormsby Beets 911683.
- 1441830 DE KOL ORMSBY ONA, Oct. 12, 1927; Ona Sellinck; Ormsby Ona 470131 - De Kol Cornucopia Sanostine 873911.
- 1441831 BONNIE GIRL ORMSBY, June 27, 1929; T. W. Young; Campue King Wonder 435966 - Bourbon Roy Skylark Gerben 965917.
- 1441832 ALLIE SENSATION PRIDE, Dec. 1, 1929; Theo. Hagen; Ostland Seneation Ormsby Pride 523364 - Allie Korndyke Ormsby 2d 1098693.
- 1441833 EVERGLADE ORMSBY KORNDYKE, Dec. 6, 1929; A. F. Reimensnyder; Ormsby Burke Korndyke Lad 538407 - Rosepoint Lyons Johanna 837469.
- 1441834 LAURA INKA FOBES, Aug. 17, 1930; Jas G. Strong; Carnation Inka Matador 540931 - Laura Fayne Fobes 1080780.
- 1441835 INKA JEWEL FOBES PONTIAC, Aug. 30, 1930; Jas. G. Strong; Carnation Inka Matador 540931 - Queen Pontiac Jewel Fobes 1123091.
- 1441836 LADY JEWEL HOMESTEAD INKA, Aug. 30, 1930; Jas. G. Strong; Carnation Inka Matador 540931 - Fobes Jewel Homestead 1257713.
- 1441837 KONIGEN SEGIS INKA, Sept. 7, 1930; Jas. G. Strong; Carnation Inka Matador 540931 - Colanthus Segis Konigen 1281695.
- 1441838 SHEYENNE KORNDYKE ORMSBY, Mar. 9, 1930; J. Van Houten; Sir Pietertje Korndyke Wren 567875 - No-Dak Korndyke Ormsby 1245355.
- 1441839 SHEYENNE MINITA PAULINE, Apr. 24, 1930; J. Van Houten; Femco Sir Pauline 545459 - Minita Sheyenne Wren 1130923.
- 1441840 SHEYENNE FLORENCE PAULINE, Apr. 30, 1930; J. Van Houten; Femco Sir Pauline 545459 - No-Dak Florence Pietertje 1245350.
- 1441841 SHEYENNE BARBETTA PAULINE, May 11, 1930; J. Van Houten; Femco Sir Pauline 545459 - Barbetta Ormsby Piebe 661686.
- 1441842 SHEYENNE KORNDYKE PAULINE, May 13, 1930; J. Van Houten; Femco Sir Pauline 545459 - Minita Korndyke Ormsby Piebe 822672.
- 1441843 SHEYENNE WREN PAULINE RAG APPLE, June 15, 1930; J. Van Houten; Femco Sir Pauline 545459 - Wren Mercedes Rag Apple 1130920.
- 1441844 SHEYENNE ORMSBY PAULINE, July 17, 1930; J. Van Houten; Femco Sir Pauline 545459 - No-Dak Ormsby Perfection 1249290.
- 1441845 DE KOL PIEBE ORMSBY KATHERN, May 25, 1930; Robt. J. Berg; Jaus Ormsby Piebe Patrick 569717 - Princess Katherne De Kol Piebe 1138288.
- 1441846 ARTIS ORMSBY FANNIE, Mar. 24, 1930; Robt. J. Berg; Jaus Ormsby Piebe Patrick 569716 - Fannie Piebe Artis De Kol 1138287.
- 1441847 DE KOL FANNIE ORMSBY, Mar. 12, 1930; Robt. J. Berg; Jaus Ormsby Piebe Patrick 569716 - Fannie Piebe De Kol Artis 1065809.
- 1441848 STAR PIEBE DAKOTA, Sept. 20, 1929; Fred C. Holle; King Piebe Boy 521982 - Queen North Star Pontiac 534615.
- 1441849 MARIE PIEBE WA WA, Oct. 1, 1929; Fred C. Holle; King Piebe Boy 521982 - Queen Marie Wa Wa 908479.
- 1441850 SKYLARK PIEBE SALEM, Oct. 25, 1929; Fred C. Holle; King Piebe Boy 521982 - Junette Skylark 700896.
- 1441851 COLANTHA PIETERTJE BELLE LASS, Sept. 23, 1929; Earle L. Crawford; King Pietertje Rag Apple Ormsby 506001 - Colantha Belle De Kol Lass 1100463.
- 1441852 ECHO PIETERTJE AAGGIE, Oct. 31, 1929; Earle L. Crawford; King Pietertje Rag Apple Ormsby 506001 - Aaggie Echo Posch 865981.
- 1441853 CREAMELLE TEHEE SEGIS, Aug. 26, 1930; Emil Utlaut; Millstown Prince Tehee De Kol 564730 - Creamelle Segis Wietske 1113497.
- 1441854 JESSIE MAY ORMSBY, Oct. 20, 1929; Arthur Adams; Sir Juma Johanna Fobes 541629 - Jessie Ormsby Buda Wayne 1223634.
- 1441855 HOLWIS TRIUNE PEACHES, Oct. 5, 1929; Henry Anthes; Sir Triune Pansy 9th 542035 - Holwis Field Peaches De Kol 1165941.
- 1441856 BELLE ONA DE KOL SEGIS PONTIAC, Sept. 17, 1929; Fred Risch; Geo. Dilts; Pontiac Bell Farm Artis 488554 - Ona De Kol Segis Glen Alex 1358727.
- 1441857 ROSIE PIERE SEETS, Oct. 6, 1929; Elias Kultala; Vernreen Duke Inka Piebe 501507 - Hester Johanna Seets Korndyke 1019929.
- 1441858 SNOWBIRD ORMSBY SEETS, Feb. 15, 1930; Elias Kultala; Sir Johanna Korndyke Oaks 557950 - Aaggie Ormsby Johanna Seets 863310.
- 1441859 PEARL KORNDYKE MOOIE, June 18, 1928; E. E. Wilson; Edward F. Harris; Faircrest Sir Rose Korndyke 420910 - Pearl Wayne Mooie 851739.
- 1441860 LANGLAAOTE CLIO ORMSBY, Oct. 11, 1928; Patterson Bros.; Longheath Ormsby Pride 487005 - Langlaagte Constance Ormsby 1139107.
- 1441861 LANGLAAOTE MARELLE ORMSBY, July 15, 1929; Patterson Bros.; Langlaagte Ormsby Pietertje 508996 - Mapessa Zarelda Newman 762098.
- 1441862 LANGLAAOTE RAQUEL ZARILDA ORMSBY, May 25, 1930; Patterson Bros.; Langlaagte Ormsby Pietertje 508996 - Mapessa Zarilda Newman 762098.
- 1441863 LANGLAAOTE DEMARIS ORMSBY, Mar. 30, 1930; Patterson Bros.; Langlaagte Ormsby Pietertje 508996 - Daisy of Willowmead 708190.
- 1441864 SADIE VALE CREATOR, Sept. 5, 1929; Waity Wheeler & Catherine Leland; Korndyke Creator Sadie Vale 528510 - Queen Mercedes Pontiac Canary 1111230.
- 1441865 KORNDYKE MERCEDES PONTIAC CREATOR, De. 11, 1929; Waity Wheeler & Catherine Leland; Korndyke Creator Sadie Vale 528510 - Violet Mercedes Pontiac 574777.
- 1441866 WALSHLAND MOLLIE PANSY ORMSBY 2d, Oct. 15, 1928; P. H. Walsh; Sir Walker Homestead Creamelle 526764 - O Walshland Mollie Pansy Ormsby 1039630.
- 1441867 ALMA MAY ABESEKERK LYONS, Oct. 13, 1929; Geo. E. Walter; Captain Abeekerk Lyons 562694 - Alpheia May Ormsby Shadeland 1081812.
- 1441868 ORMSBY SADIE VALE MAID, Sept. 26, 1929; Somers Bros.; Glencliff Segie Ormsby Burke 491836 - Nancy De Kol Sadie Vale Maid 777723.
- 1441869 PET ONA CARNATION INKA MAY, May 3, 1930; Wm. H. Hill; Carnation Prospector Inka May 555621 - Pet Ona Segie 1246389.
- 1441870 BEAUTY ALCARTRA BELLE, Sept. 7, 1929; Chas. A. Bickel; Don Sylvia Alcartra 491049 - Sadie Queen Tidy 1182856.
- 1441871 INKA BELLE SYLVIA, Dec. 11, 1929; Chas. A. Bickel; Don Sylvia Alcartra 491049 - Belle Colantha Tidy BB5251.
- 1441872 QUEEN JOHANNA SEGIS CREAMELLE, Sept. 22, 1929; Clayton J. Finch; Segis De Kol Creamelle Lad 514791 - Betty Johanna Segis 645041.
- 1441873 KILMARNOCK KORNDYKE ORMSBY MAY, Oct. 30, 1929; Crawford & Swift; Clive Evergreen Ormsby 562729 - Lady Korndyke Ormsby Snowball 1180721.
- 1441874 KILMARNOCK ORMSBY DEWIT STAR, Nov. 3, 1929; Crawford & Swift; Clive Evergreen Ormsby 562729 - Miss Jewel Dwit 773758.
- 1441875 KILMARNOCK ORMSBY PONTIAC DAISY, June 18, 1930; Crawford & Swift; Clive Evergreen Ormsby 562729 - Belle Veeman Pontiac Seete 2d 1280098.
- 1441876 BUTTER BOY WINNWOOD CANARY, Sept. 26, 1929; Earl Roundy; Winnwood Maple Crest Canary 407045 - Butter Boy Princess 692475.
- 1441877 JOHANNA MAPLE CREST ROUNDY, Sept. 26, 1929; Earl Roundy; Winnwood Maple Crest Canary 407045 - Aaggie Belle Johanna Clothilde 1049699.
- 1441878 PRINCESS AAGGIE WINNWOOD, Oct. 24, 1929; Earl Roundy; Winnwood Maple Crest Canary 407045 - Princess Aaggie Friend 743203.
- 1441879 STOOPS ANITA AAGGIE DE KOL PIEBE, Nov. 8, 1929; Chas. G. Stoops; King Lieuwkje Piebe 504253 - Stoops Holland Aaggie De Kol 971017.





- 1 GENERAL BUSINESS
 - 2 LOCAL STORES
 - 3 GENERAL RESIDENCE
 - 4 1 FAMILY DWELLING
- WITHIN STREET OR WAY
▲ 100 FEET FROM STREET
..... ALONG PROPERTY LINE



10

BLOCKS 48-52

Schedule 1 of Exhibit B, Cont'd.

	1932 Actual		1933 Estimated		1934 Estimated		1935 Estimated	
	Unrestricted	Restricted	Unrestricted	Restricted	Unrestricted	Restricted	Unrestricted	Restricted
SALES OF COMMODITIES								
Bank Reports and Laws	\$79.00		\$100.00		\$100.00		\$100.00	
Publications - State Dept.	1,930.16		2,000.00		1,900.00		2,000.00	
Record Books - Law Enforcement	187.15		200.00		200.00		200.00	
Court Reports	66.50							
Publications & Reports PSC	361.45		498.00		498.00		498.00	
Nursery Stock - Forestry	1,317.93		1,500.00		1,500.00		1,500.00	
State Hospital		\$6,863.46		\$7,400.00		\$7,400.00		\$7,400.00
Industrial School		377.27						
State Sanatorium		392.95		125.00		125.00		125.00
Laconia State School		630.11		1,000.00		1,000.00		1,000.00
Keene Normal School		422.95						
Plymouth Normal School		119.05						
Public Welfare - Shop Prod.	665.89	9,056.58		10,500.00		13,285.00		13,285.00
Other Misc. Sales		25.79						
Total - Sales of Comm.	4,608.08	17,888.16	4,298.00	19,025.00	4,198.00	21,810.00	4,298.00	21,810.00
SALES OF SERVICES								
Board of Private Patients								
State Hospital	84,263.80		80,000.00		85,000.00		90,000.00	
Indigent Patients								
State Hospital	3,600.00		3,600.00		3,600.00		3,600.00	
Board and Treatment-								
State Sanatorium	5,349.97		4,000.00		4,000.00		4,000.00	
Private Pupils - Laconia								
State School	6,624.16		6,500.00		6,500.00		6,500.00	
Convict Labor - State								
Prison	20,464.60				25,000.00		50,000.00	
Tuition - Plymouth N. S.		8,897.00		9,772.00		9,000.00		9,000.00
Tuition - Keene N. S.		36,090.78		38,000.00		40,000.00		37,000.00
Board Plymouth N. S.		38,254.87		46,230.00		43,000.00		46,000.00
Board Keene N. S.		90,894.91		86,000.00		85,000.00		85,000.00
Other Sales of Services	662.11	1,726.19	996.00	3,500.00	996.00	3,500.00	996.00	3,500.00
Total - Sales of Services	120,964.64	175,953.75	95,096.00	182,502.00	125,096.00	180,500.00	155,096.00	180,500.00
ASSESSMENTS								
Reimbursed Fees P.S.C.		18,304.47		2,500.00		5,536.00		5,536.00
Other Assessments		1,349.73						
Total Assessments		19,654.20		2,500.00		5,536.00		5,536.00
Miscellaneous Other Receipts		11,472.89			118,161.00		118,161.00	
TOTAL REVENUES GENERAL FUND	3,545,209.58	596,926.94	3,310,338.43	564,377.00	3,392,073.00	565,036.00	3,440,928.00	564,936.00

STATE OF NEW HAMPSHIRE

Estimated Restricted Revenues Credited to Various General Appropriations Classified by Organization Units and Sources of Revenue for the Fiscal Years Ending June 30, 1932, 1933, 1934 and 1935

Organization Unit and Source of Revenue	Actual 1932	Estimated 1933	Estimated 1934	Estimated 1935
ADJUTANT GENERAL'S DEPT.				
Lease of Land	\$627.40	-	-	-
Sales of Products	16.35	-	-	-
Total - Adjutant General	643.75	-	-	-
DEPARTMENT OF AGRICULTURE				
Fruit & Vegetable Inspection	30.75			
FORESTRY DEPARTMENT				
Bulletin Income	1,011.39	\$750.00	\$750.00	\$750.00
Donations and Gifts	150.00	-	-	-
Total-Forestry Dept.	1,161.39	750.00	750.00	750.00
STATE HOUSE DEPARTMENT				
Sales of Commodities	* 6.94			
Sales of Services	* 714.80	2,750.00	2,750.00	2,750.00
Total - State House Department	721.74	2,750.00	2,750.00	2,750.00
* Portion of 1932 Revenue Credited as Repayments				
SECRETARY OF STATE				
Fines - Hawkers & Peddlers Act	* 35.00	-	-	-
* Actually \$85.00, but \$50.00 credited as Repayment rather than Revenue				
STATE TREASURER				
Expense of Collecting Intangible Tax	2,368.60	2,850.00	2,750.00	2,750.00
INDUSTRIAL SCHOOL				
Sales of Commodities	377.27			
LACONIA STATE SCHOOL				
Sales of Commodities	630.11	1,000.00	1,000.00	1,000.00
Rents & Leases	30.00			
Total - Lac.State School	660.11	1,000.00	1,000.00	1,000.00
SOLDIERS HOME				
Subventions & Grants - Federal	4,884.76	4,750.00	5,000.00	5,000.00
STATE HOSPITAL				
Sales of Commodities	6,863.46	7,400.00	7,400.00	7,400.00
STATE PRISON				
Misc. Sales of Commodities	2.50	-	-	-
STATE SANATORIUM				
Misc. Sales of Commodities	392.95	125.00	125.00	125.00

6 pitch - 6 characters to the inch

AMPLITYPE

The most legible of all typefaces. For labels tags, Sight Conservation classes, etc. 1234567

8 pitch - 8 characters to the inch

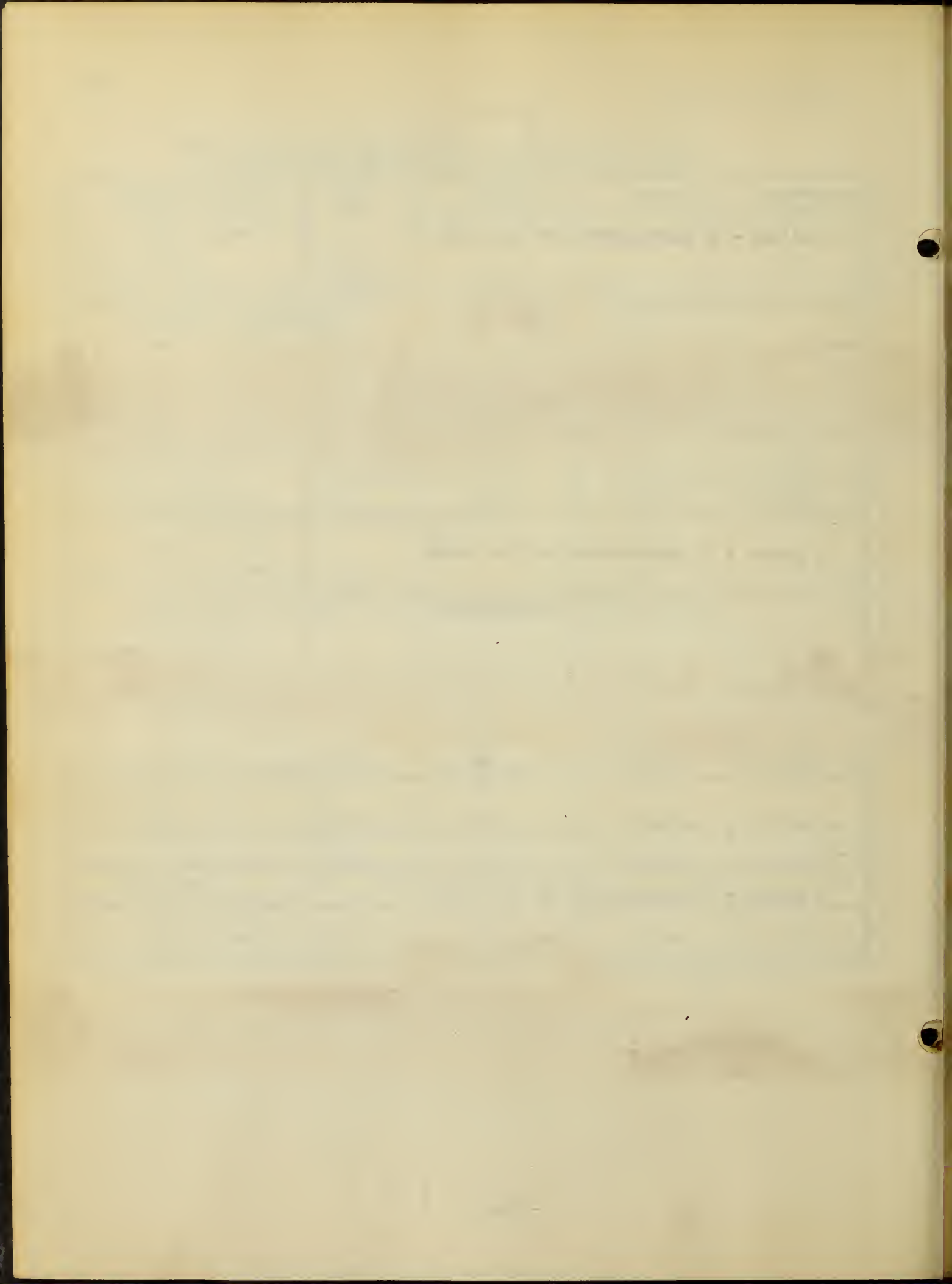
BUTTERICK

A heavy shaded type resembling printing used for photographic reproduction. 1234567890

9 pitch - 9 characters to the inch

EXECUTIVE TYPE

A BEAUTIFUL AND UNUSUAL TYPE FACE, ESPECIALLY DESIGNED FOR EXECUTIVES WHO DESIRE A DISTINCTIVE TYPE STYLE FOR THEIR CORRESPONDENCE. 1 2 3 4 5 6 7 8 9 0



GREAT PRIMER TYPE

Large size and maximum legibility make this type the choice for speakers and sight conservation classes.

1 2 3 4 5 6 7 8 9 0

BOOK TYPE

This is a shaded type which corresponds to printing. It is often used for photographic reproduction work.

1 2 3 4 5 6 7 8 9 0

10 pitch - 10 characters to the inch

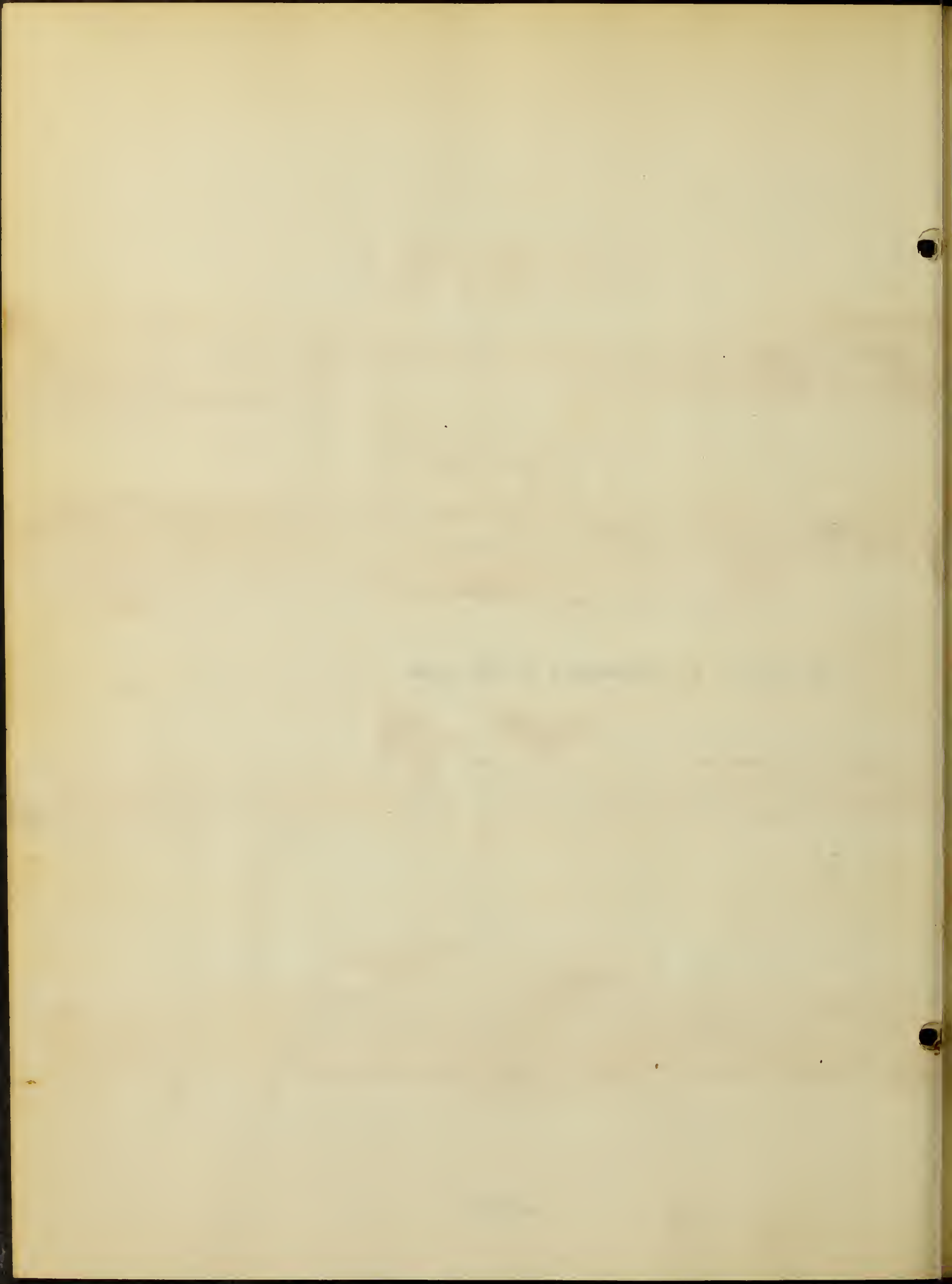
MEDIUM ROMAN TYPE

In some cases this type is preferred to the ordinary pica type, because of its increased legibility. 1234567890

ELITE DOUBLE GOTHIC TYPE

THIS TYPE CONSISTS OF GOTHIC LETTERS, BROUGHT DOWN TO REGULAR ELITE SIZE. IT IS SMALL AND NEAT FOR CARDWORK.

1234567890



PICA TYPE

This excellent legible type face is the one most frequently used for business correspondence. 1234567890

PICA DOUBLE GOTHIC TYPE

FOR THOSE WHO PREFER GOTHIC LETTERS, THIS TYPE IS MADE IN THE REGULAR PICA SIZE. ITS USES ARE MANY.

1234567890

PICA ITALIC TYPE

A distinctive and beautiful type face that is often used for social correspondence. Graceful - unusual.

1 2 3 4 5 6 7 8 9 0

12 pitch - 12 characters to the inch

ELITE DOUBLE GOTHIC MODIFIED UPPER CASE

THIS SMALL TYPE IS ESPECIALLY SUITED FOR BILLING AND DOCUMENT WORK WHERE BOTH UPPER AND LOWER CASE CHARACTERS ARE DESIRED. 1 2 3 4 5

ELITE TYPE

The handsome appearance of Elite Type makes it a decided favorite for distinctive executive correspondence. 1234567890

PLANOGRAPH

Reproduction



Specialists

PRINTING

M A N U A L

REDUCTION AND ENLARGEMENT OF TYPEWRITER TYPE

In Planograph Printing, it is not necessary to have your finished copies in the same size type, as the original. Planography permits of wide latitude in reduction or enlargement. The examples below illustrate and show the appearance of various types in reduction and enlargement. Percentages stated express relationship of finished to original size.

Elite Typewriter Type

100%-Facsimile Size

Elite size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 166 pages 6 x 9, 135 pages 7 x 10-1/4, and 96 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Elite Typewriter Type

85% - A Reduction

Elite size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 125 pages 6 x 9, 99 pages 7 x 10-1/4, and 71 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Elite Typewriter Type

75% - A Reduction

Elite size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 95 pages 6 x 9, 75 pages 7 x 10-1/4, and 54 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Elite Typewriter Type

66% - A Reduction

Elite size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 76 pages 6 x 9, 60 pages 7 x 10-1/4, and 44 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.



PLANOGRAPH

Reproduction

Specialists

PRINTING

M A N U A L

Great Primer Type

100%-Facsimile Size

Great Primer Size, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 300 pages 6 x 9, 240 pages 7 x 10-1/4, and 173 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Great Primer Type

85% - A Reduction

Great Primer Size, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 208 pages 6 x 9, 167 pages 7 x 10-1/4, and 123 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Great Primer Type

75% - A Reduction

Great Primer Size, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 167 pages 6 x 9, 135 pages 7 x 10-1/4, and 96 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Great Primer Type

66% - A Reduction

Great Primer Size, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 106 pages 6 x 9, 87 pages 7 x 10-1/4, and 76 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Great Primer Type

50% - A Reduction

Great Primer Size, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 76 pages 6 x 9, 60 pages 7 x 10-1/4, and 43 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.



PLANOGRAPH

Reproduction

Specialists

PRINTING

M A N U A L

Pica Typewriter Type

100%-Facsimile Size

Pica size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 200 pages 6 x 9, 161 pages 7 x 10-1/4, and 116 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Pica Typewriter Type

85% - A Reduction

Pica size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 147 pages 6 x 9, 118 pages 7 x 10-1/4, and 84 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Pica Typewriter Type

75% - A Reduction

Pica size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 114 pages 6 x 9, 91 pages 7 x 10-1/4, and 65 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

Pica Typewriter Type

66% - A Reduction

Pica size, standard typewriter, original typed copy 6-7/8" in length. 50,000 words at this size will occupy 91 pages 6 x 9, 73 pages 7 x 10-1/4, and 54 pages 8-1/2 x 11 finished trim size. For clear, sharp, typewritten copy the essentials are (1) a suitable black ribbon, (2) clean type, (3) proper alignment, and (4) uniform touch.

(Continued from page 2.)

SHOWING ROUGH COPY

Engineers judge the strength of a cable not alone by its/// size but by the weight of the/ load it is designed to carry./

The strength of a life in-// surance company is not be be// judged alone by the size of/// its capital and surplus. This/ must be compared with the size of the load it has to carry -- the amount of insurance it has in force.

SHOWING SMOOTH COPY

Engineers judge the strength of a cable not alone by its size but by the weight of the load it is designed to carry.

The strength of a life insurance company is not to be judged alone by the size of its capital and surplus. This must be compared with the size of the load it has to carry -- the amount of insurance it has in force.

PLANOGRAPH

Reproduction



Specialists

PRINTING

MANUAL

How to Estimate Finished Copy Sizes

The table below can be used as a convenient basis for determining the approximate finished size and the number of pages of copy or manuscript which you have ready for planograph printing. It can also be used to estimate the approximate number of words necessary to fill any desired number of pages -- or the maximum number of words which can be included within the limits that you desire to set up. The three standard page sizes most generally used are given -- other sizes can easily be worked out from the figures.

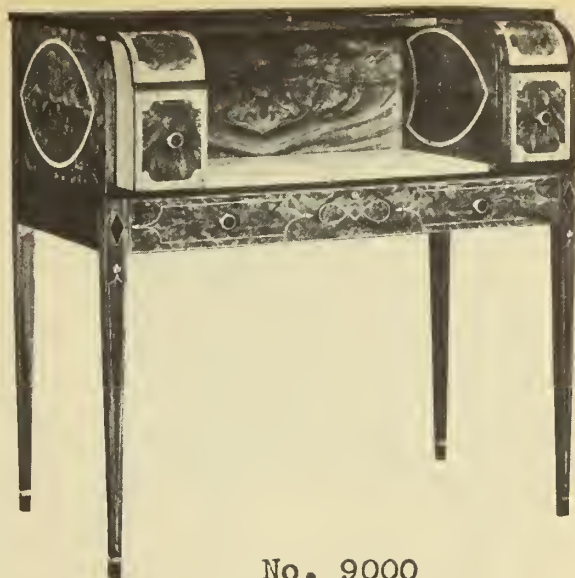
Tables of Typewriter Type Reductions

Col. 1	Col. 2			Col. 3		
Percentage of the original size of the typing.	Approximate Number of Words per Page.			Required Dimensions of Original Typing Area.		
	Final Areas; 4-1/2x6-7/8 Ptd. 6 x 9 Trim	Final Areas; 5-1/4x7-3/8 Ptd. 7x10-1/4 Trim	Final Areas; 6-3/4 x 8 Ptd. 8-1/2x11 Trim	Final Areas; 4-1/2x6-7/8 Ptd. 6 x 9 Trim	Final Areas; 5-1/4x7-3/8 Ptd. 7x10-1/4 Trim	Final Areas; 6-3/4 x 8 8-1/2x11 Trim
ELITE-100%	300	370	520	4-1/2 x 6-7/8	5-1/4 x 7-3/8	6-3/4 x 8
- 85%	400	505	705	5-1/4 x 8-1/8	6-1/4 x 8-5/8	6-7/8 x 9-3/8
- 75%	530	665	925	6 x 9-1/8	7 x 9-7/8	9 x 10-5/8
- 66%	660	830	1150	6-7/8x10-3/8	8 x 11-1/8	10-1/4x12-1/8
PICA -100%	250	310	430	4-1/2 x 6-7/8	5-1/4 x 7-3/8	6-3/4 x 8
- 85%	340	425	595	5-1/4 x 8-1/8	6-1/4 x 8-5/8	6-7/8x9-3/8
- 75%	440	550	770	6 x 9-1/8	7 x 9-7/8	9 x 10-5/8
- 66%	550	690	920	6-7/8x10-3/8	8 x 11-1/8	10-1/4x12-1/8
GREAT-100%	166	208	290	4-1/2 x 6-7/8	5-1/4 x 7-3/8	6-3/4 x 8
PRIMER 85%	240	300	405	5-1/4 x 8-1/8	6-1/4 x 8-5/8	6-7/8 x 9-3/8
- 75%	300	370	520	6 x 9-1/8	7 x 9-7/8	9 x 10-5/8
- 66%	470	580	660	6-7/8x10-3/8	8 x 11-1/8	10-1/4x12-1/8
- 50%	660	830	1170	9 x 13-3/4	10-1/2x14-3/4	13-1/2 x 16

Column 1 lists the three common sizes of typewriter type. It also gives typical reductions of these sizes. Please note particularly that the figures given do not represent the percentage reduction -- but percentage of the original size. Thus "75" is 75% of the original size; actually a 25% reduction.

Column 2 gives the approximate number of words appearing in the 3 standard areas at the sizes shown in Column 1.

Column 3 shows the area in which your work should be typed to secure the desired number of words per page as given in Column 2.



No. 9000
Mixing Table.
Size 42" x 24" x 43½"



No. 9102
Block-front Knee Hole Desk.
Size 40" x 22½" x 31"



No. 924
Queen Anne Writing Desk.
Size $27\frac{1}{2}$ " x 17" x 40"



No. 925
Pine Desk on Frame.
Size, $33\frac{1}{4}$ " wide,
41" High, $19\frac{1}{8}$ " deep.
No. 6035 Bench.



HEYWOOD-WAKEFIELD



83 P
Fluted Back

Smart Model That Attracts Attention

As Illustrated

- 34 inches long overall
- 25 inches deep overall
- 20 inches height of back
above cushion
- 34 inches floor to top of back
- 18 inches floor to top of
cushion
- 27 inches minimum seat
spacing

Selection of Attractive Covering Combinations.

Note compactness of design for comfort in restricted space—ample leg clearance.

Construction Specifications

Soft upholstered fluted back—SEPARATE air cushions, having proper relation of pitch to back.

Northern grown hardwood steam bent frame,
soft padded arm rest, grip handle.

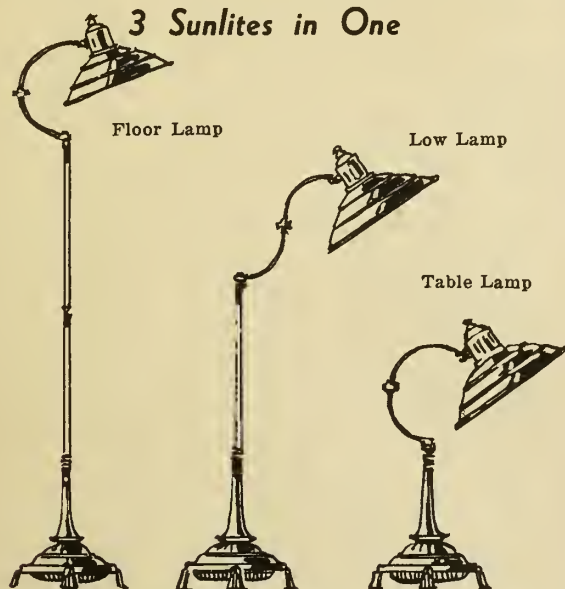
Particularly note fabric covered rear of back with carpet kick pad.

*The above are standard specifications, which can be altered to meet
your own requirements.*

THE MILLER SUNLITE

No. 9

3 Sunlites in One



THE graceful simplicity of this model makes it particularly appropriate in almost any room in the home. It, too, is designed with the Udezine principle so as to provide a range of three delightfully proportioned lamps. The arm is adjustable and may be used at any desired angle and the center swivel is constructed so that the arm swings completely around. Includes louvers in reflector.

Uses type S-2 Mazda Sunlight lamp.

Operates on 108-118 volt, 60 cycle alternating current (lamps for other voltages and cycles can be supplied, prices on application).

Has outlet under base for inserting automatic time switch.

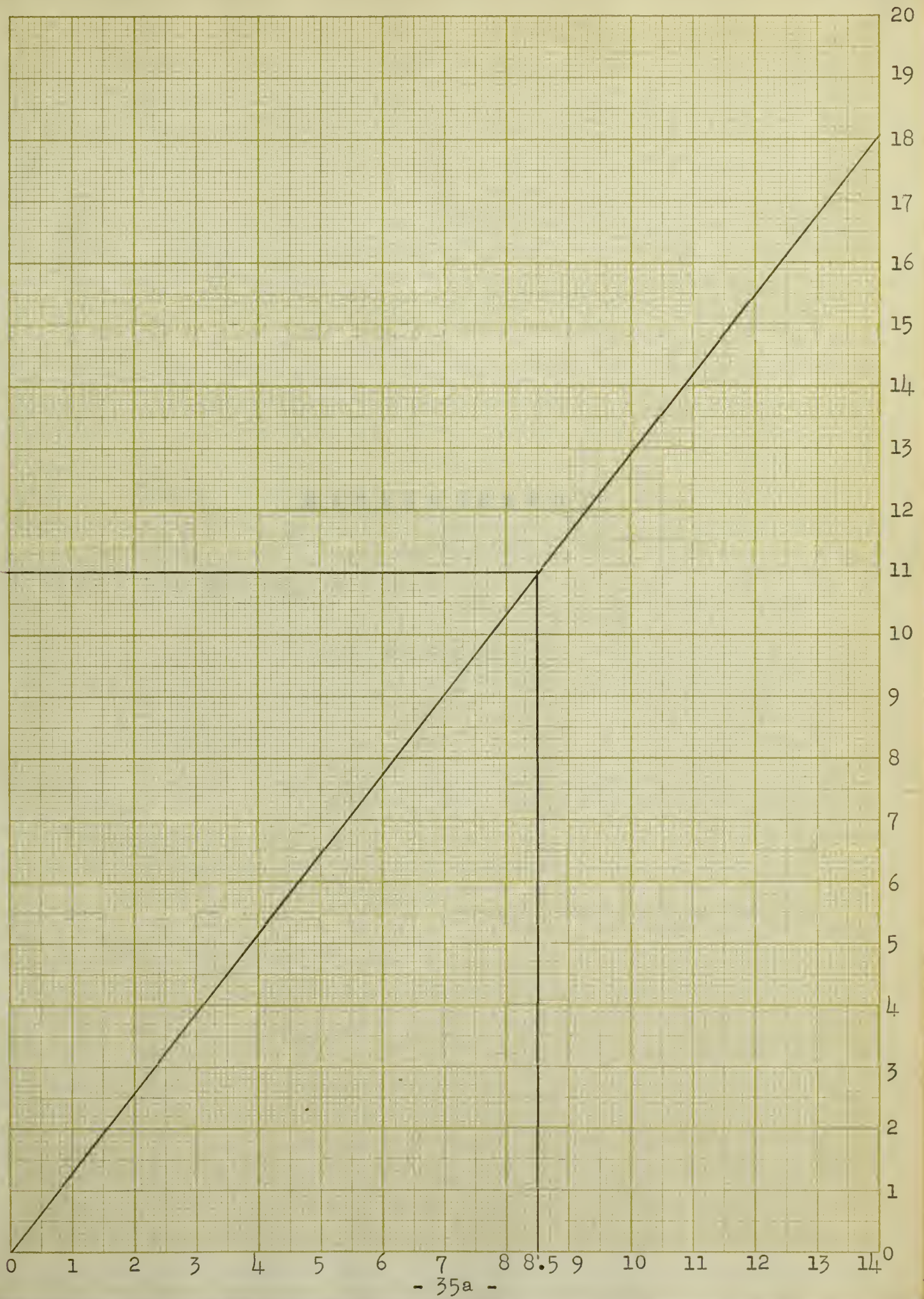
Furnished complete with column, one 18½ inch Udezine tube and one 15½ inch tube.

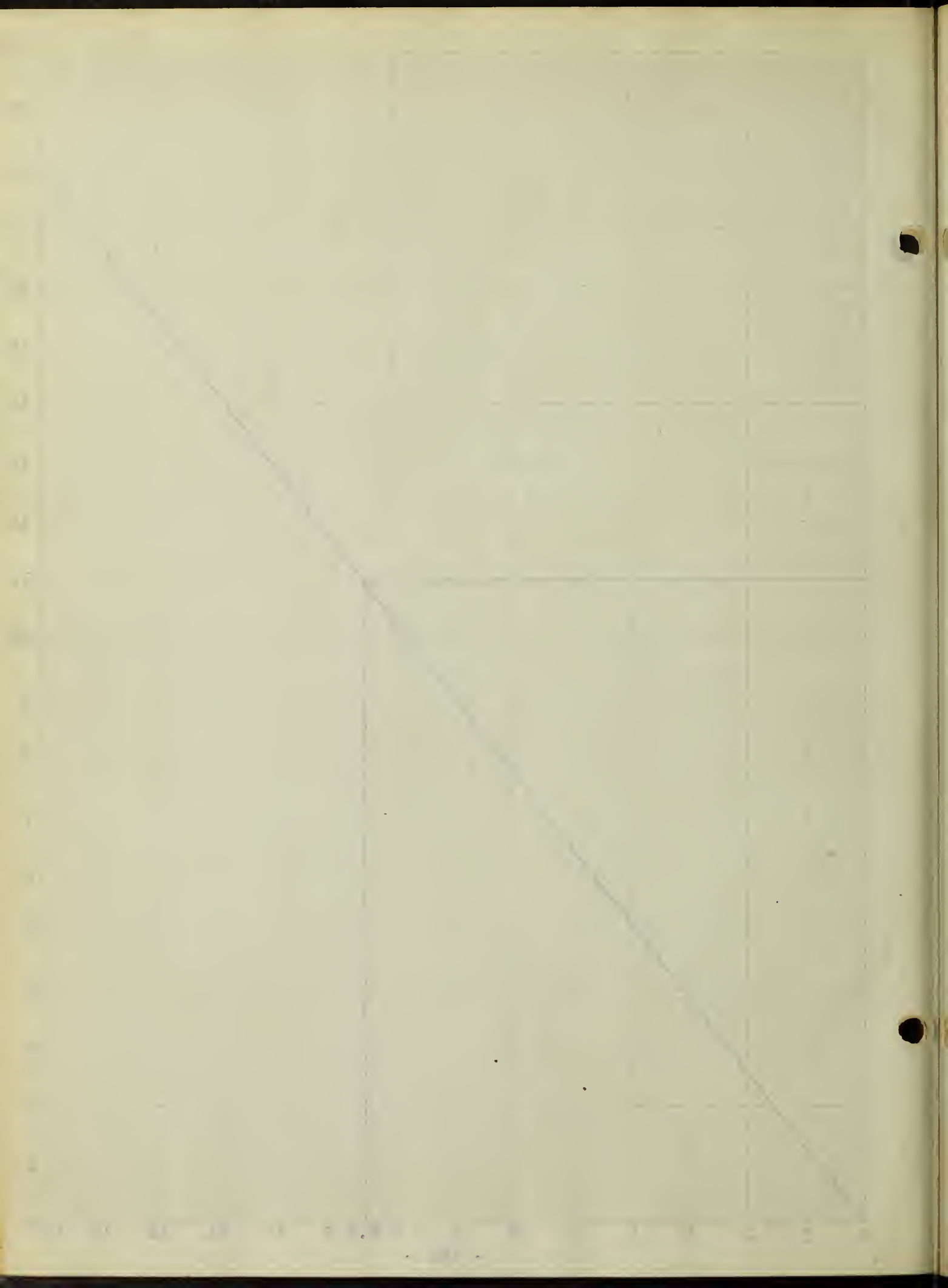
Packed in small individual carton.

Diameter of reflector, 12 inches.

Finished in Ivory with Black Stripes or in Bronze with Gold.







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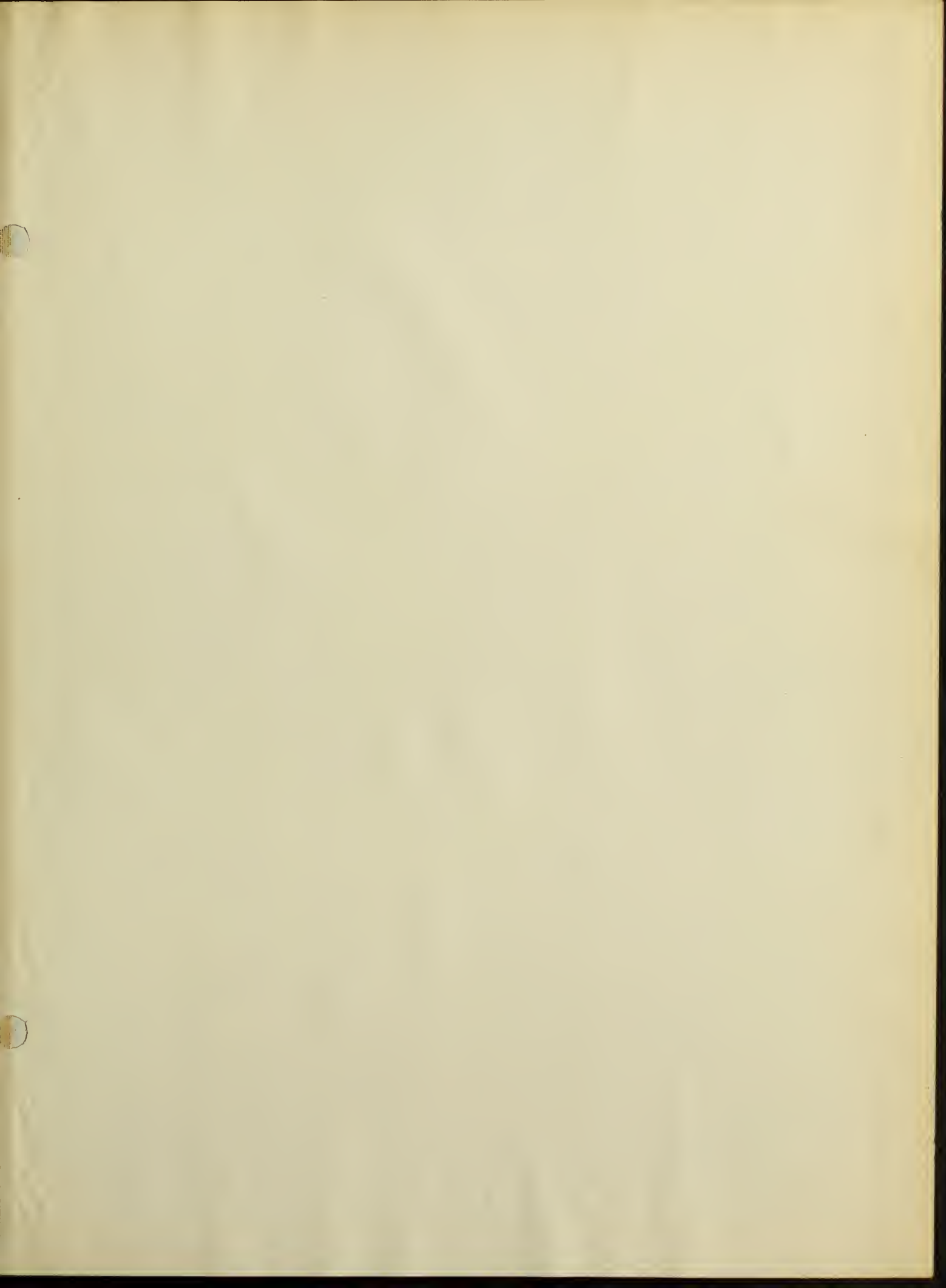
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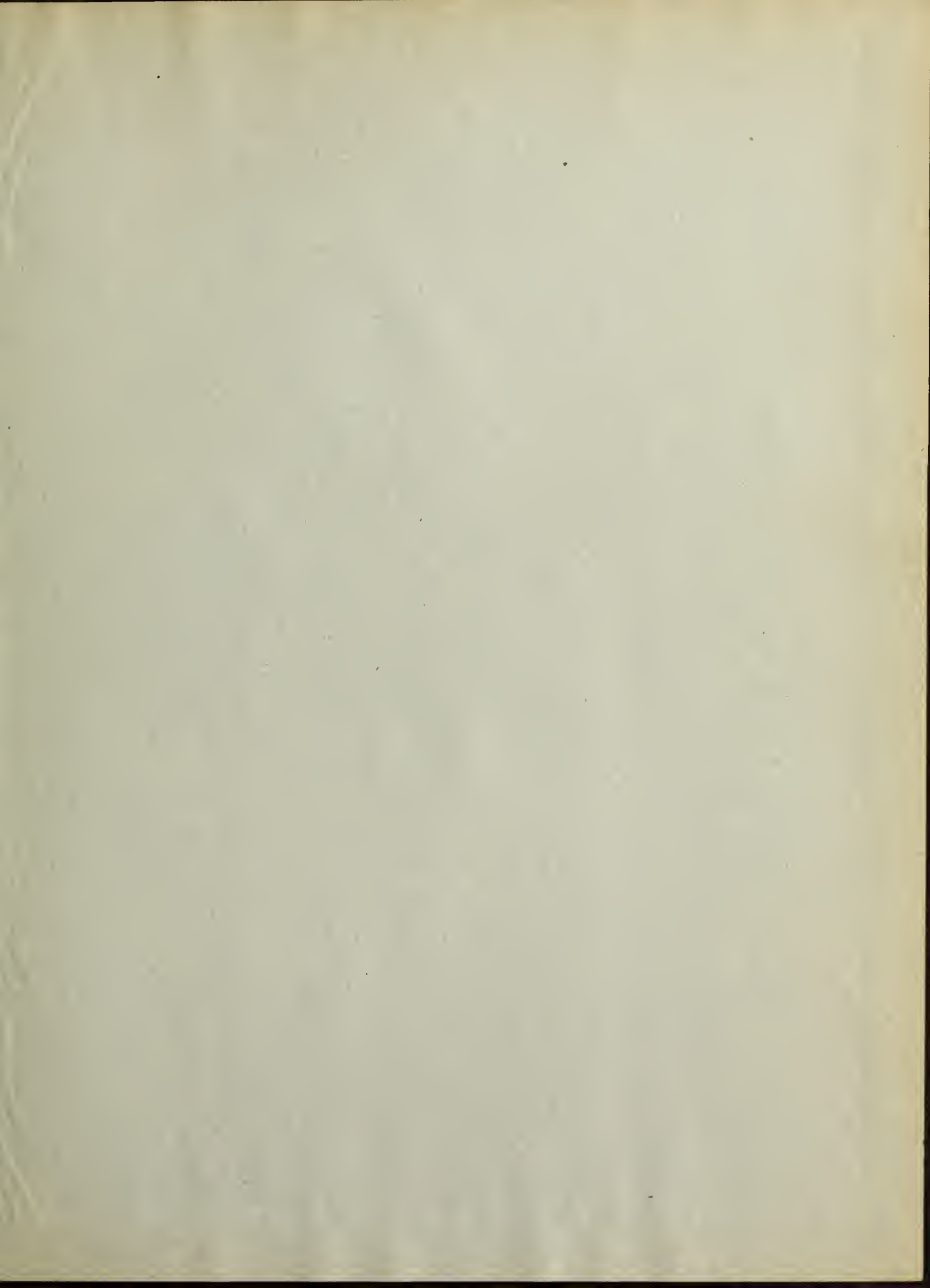
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